

CONNECTICUT RIVER FLOOD CONTROL PROJECT

T-TYPE CANTILEVER FLOOD WALLS

SPECIFICATIONS

**FOR THE
CONSTRUCTION OF**

IMPROVEMENT MEASURES

**HARTFORD & EAST HARTFORD CONN.
CHICOPEE, HOLYOKE & NORTHAMPTON, MASS.**

VOLUME I OF I



**U. S. ARMY ENGINEER DIVISION, NEW ENGLAND
CORPS OF ENGINEERS
BOSTON, MASS.**

JULY 1957

Serial No. CIVENG-19-016-58-1

CONNECTICUT RIVER FLOOD CONTROL PROJECT

SPECIFICATIONS

FOR

T-TYPE CANTILEVER FLOODWALL

IMPROVEMENT MEASURES

HARTFORD AND EAST HARTFORD

CONNECTICUT

AND

CHICOPEE, HOLYOKE AND NORTHAMPTON

MASSACHUSETTS

CONNECTICUT RIVER, CONNECTICUT AND MASSACHUSETTS

8 JULY 1957

U. S. ARMY ENGINEER DIVISION, NEW ENGLAND

CORPS OF ENGINEERS

BOSTON, MASSACHUSETTS

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BID FORM

**INVITATION FOR BIDS
(CONSTRUCTION CONTRACT)**

REFERENCE

Serial No. CIVENG-19-016-58-1

DATE

8 July 1957

DEPARTMENT OR AGENCY

U. S. ARMY ENGINEER DIVISION, NEW ENGLAND
CORPS OF ENGINEERS

T-TYPE CANTILEVER FLOODWALL IMPROVEMENT
MEASURES AT HARTFORD AND EAST HARTFORD,
CONNECTICUT, AND CHICOPEE, HOLYOKE AND
NORTHAMPTON, MASSACHUSETTS, CONNECTICUT
RIVER, CONNECTICUT AND MASSACHUSETTS

BY (Issuing Office)

U. S. Army Engineer Division, New England
Corps of Engineers
150 Causeway Street
Boston 14, Mass.

Sealed bids in duplicate for furnishing all labor, equipment, and materials and performing all work for the project described herein will be received until 26 July 1957 at 3:00 p.m., E.D.S.T.

in Office of the U. S. Army Engineer Division, New England, Corps of Engineers, 150 Causeway Street, Boston 14, Massachusetts, at Bids Receiving Desk (so identified) 4th Floor (Bidders who attend bid opening may deliver bids directly to Contracting Officer in the Bid Opening Room.)
and then publicly opened at Bid Opening Room, 3rd Floor, 150 Causeway St., Boston, Mass.
Information regarding bidding material, bid guarantee, and bonds

1. Bids shall be submitted on Standard Form 21 (Bid Form - Construction Contract) and shall be prepared in accordance with Standard Form 22 (Instructions to Bidders). The bidder who is awarded the contract will be required to execute the standard contract form for construction contracts (Standard Form 23) attached hereto with Standard Form 23A, General Provisions, and supplement thereto which set forth the contract clauses.

2. Bid Bond on U. S. Standard Form No. 24 in a penal sum of not less than 20% of the bid price or in a penal sum of \$1,000,000, whichever is the lesser amount, will be required with each bid if the bid price is in excess of \$2,000.

Description of work. - The work consists of furnishing all plant, labor, materials and equipment and performing all work in strict accordance with the specifications, drawings, and schedules for the T-Type Cantilever Floodwall Improvement Measures to floodwalls along the Connecticut River as follows:

Specifications entitled:

"T-TYPE CANTILEVER FLOODWALL IMPROVEMENT
MEASURES AT HARTFORD AND EAST HARTFORD,
CONNECTICUT AND CHICOPEE, HOLYOKE AND
NORTHAMPTON, MASSACHUSETTS, CONNECTICUT
RIVER, CONNECTICUT AND MASSACHUSETTS "

Drawings as listed in Par. SO-4 of the specifications.

Schedules as set forth in the bid form.

Information regarding liquidated damages (if any), payments, etc., is attached or made a part of the specifications. Bids shall be submitted on the forms furnished or copies thereof.

READ THE FOLLOWING IN CONJUNCTION
WITH INSTRUCTIONS TO BIDDERS
(U.S. STANDARD FORM 22)

SUPPLEMENT TO INVITATION FOR BIDS
(Construction Contract)

1. Where sets of drawings and specifications are requested by bona fide bidders, a maximum of 3 sets will be furnished any one bidder. A deposit of \$10. per set will be required to insure their return. The deposit should be made in the form of a United States Money Order, or a certified check, made payable to the "Treasurer of the United States" and delivered to the Budget and Accounts Branch, Corps of Engineers, Department of the Army, Boston, Mass. The deposit, if made, will be refunded if the drawings and specifications are returned in good condition, transportation prepaid to the issuing Office within 15 days after the opening of bids.

2. If the bidder, by checking the appropriate box provided therefor in his bid, has represented that he has employed or retained a company or person (other than a full-time bona fide employee working solely for the bidder) to solicit or secure his contract, he may be requested by the Contracting Officer to furnish a completed Standard Form 119, "Contractor's Statement of Contingent or Other Fees for Soliciting or Securing Contract". If the bidder has previously furnished a completed Standard Form 119 to the office issuing this invitation for bids, he may accompany his bid with a signed statement, (a) indicating when such completed form was previously furnished; (b) identifying by number the previous invitation for bids or contract, if any, in connection with which such form was submitted, and (c) representing that the statements in such previously furnished form are applicable to this bid.

3. The bidder shall state in his bid that he has available or under his control plant of the character and in the amount required to complete the proposed work within the specified time. Each bidder shall upon request by the Contracting Officer furnish a list of the plant proposed for use on the work.

4. Modifications prior to date set for opening bids. - The right is reserved, as the interest of the Government may require, to revise or amend the specifications and/or drawings prior to the date set for opening of bids. Such revisions and amendments, if any, will be announced by an addendum or addenda to this Invitation for Bids. Copies of such addenda as may be issued will be furnished to all prospective bidders. If the revisions and amendments are of a nature which require material changes in quantities or prices bid or both, the date set for opening bids may be postponed by such number of days as in the opinion of the Division Engineer will enable bidders to revise their bids. In such case, the addendum will include an announcement of the new date for opening bids.

READ THE FOLLOWING IN CONJUNCTION
WITH INSTRUCTIONS TO BIDDERS
(U.S. STANDARD FORM 22)

SUPPLEMENT TO INVITATION FOR BIDS
(Construction Contract)

5. The Government further reserves the right to make award on any or all lots of any bid, unless the bidder qualifies such bid by specific limitation; also to make award to the bidder whose aggregate bid on any combination of bid lots is low.

6. Technical inquiries regarding the plans and specifications during the bidding period shall be made to one of the following members of the Construction Division, New England Division, Corps of Engineers, Lafayette 3-7950.

Mr. Francis J. Haggerty Ext. 367

Mr. Henry B. Fredrickson Ext. 367

In addition, technical inquiries during the bidding period may also be made to the following:

Mr. George O. Evans, Area Engineer
Area Office No. 5
310 State Street, Springfield, Mass.
Tel. State 8-9638

PART I

STATEMENT OF WORK
(INDEX)

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SPECIFICATIONS

PART I

STATEMENT OF WORK

SW-1. DESCRIPTION OF WORK. - a. Work to be Done. - The work consists of furnishing all plant, labor, materials and equipment, and performing all work in strict accordance with these specifications and schedules and drawings forming parts thereof for Construction of Improvement Pleasures at Hartford and East Hartford, Connecticut, and Chicopee, Holyoke and Northampton, Massachusetts, Connecticut River, Connecticut and Massachusetts.

b. Location. - The sites of the work are located along the Connecticut River at Hartford and East Hartford, Connecticut, and Chicopee, Holyoke and Northampton, Massachusetts.

c. Appropriation. - 96X3122 - Construction, General, Corps of Engineers, Civil.

d. Authority. - Flood Control Act 28 June 1938 and further instructions from Chief of Engineers.

SW-2. PRINCIPAL FEATURES. - The work to be performed includes the following principal features:

a. Remedial treatments of existing vertical expansion joints in concrete floodwall.

b. Extensions of floodwall base keys.

c. Regrading designated areas.

d. Pressure grouting.

e. Piezometers.

The above general outline of principal features does not in any way limit the responsibility of the contractor to perform all work and furnish all plant, labor, materials and equipment required by the specifications and drawings referred to therein.

PART II

GENERAL CONDITIONS (INDEX)

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PART II

GENERAL CONDITIONS

GC-1. SCOPE OF WORK. - The work to be performed under this contract consists of furnishing all plant, materials, equipment, supplies, labor and transportation including fuel, power, water (except any materials, equipment, utility or service, if any, specified herein to be furnished by the Government), and performing all work as required in the statement of work in the contract, in strict accordance with the specifications, schedules, and drawings, all of which are made a part hereof, and including such detail drawings as may be furnished by the Contracting Officer from time to time during the prosecution of the work in explanation of said drawings.

GC-2. CHARACTER OF WORK AND MECHANICS. - The work shall be executed in the best and most workmanlike manner by qualified, careful and efficient mechanics in strict accordance with the drawings and specifications.

GC-3. SITE INVESTIGATION. - The contractor acknowledges that he has satisfied himself as to the nature and location of the work, the general and local conditions, including but not restricted to those bearing upon transportation, disposal, handling and storage of materials, availability of labor, water, electric power, roads and uncertainties of weather, river stages, tides or similar physical conditions at the site, the conformation and conditions of the ground, the character of equipment and facilities needed preliminary to and during prosecution of the work. The contractor further acknowledges that he has satisfied himself as to the character, quality and quantity of surface and subsurface materials or obstacles to be encountered insofar as this information is reasonably ascertainable from an inspection of the site, including all exploratory work done by the Government as well as from information presented by the drawings and specifications made a part of this contract. Any failure by the contractor to acquaint himself with the available information will not relieve him from responsibility for estimating properly the difficulty or cost of successfully performing the work. The Government assumes no responsibility for any conclusions or interpretations made by the contractor on the basis of the information made available by the Government. The Government also assumes no responsibility for any understanding or representations made by its officers or agents during or prior to the execution of this contract, unless (i) such understanding or representations are expressly stated in the contract and (ii) the contract expressly provides that the responsibility therefor is assumed by the Government. Representations which are not expressly stated in the contract and for which liability is not expressly assumed by the Government in the contract shall be deemed only for the information of the contractor.

GC-4. OPERATIONS AND STORAGE AREAS. - a. All operations of the contractor (including storage of materials) upon Government premises shall be

confined to areas authorized or approved by the Contracting Officer. No unauthorized or unwarranted entry upon or passage through, or storage or disposal of materials shall be made upon Government premises. Government premises adjacent to the construction will be made available for use by the contractor without cost whenever such use will not interfere with other Government uses or purposes. The contractor shall be liable for any and all damage caused by him to such Government premises. The contractor shall hold and save the Government, its officers and agents, free and harmless from liability of any nature or kind arising from any use, trespass or damage occasioned by his operations on premises of third persons.

b. Temporary buildings (storage sheds, shops, offices, etc.) may be erected by the contractor only with the approval of the Contracting Officer, and shall be built with labor and materials furnished by contractor without expense to the Government. Such temporary buildings and/or utilities shall remain the property of the contractor and will be removed by him at his expense upon the completion of the work. With the written consent of the Contracting Officer, such buildings and/or utilities may be abandoned and need not be removed.

c. The contractor shall, under regulations prescribed by the Contracting Officer, use only established roadways or construct and use such temporary roadways as may be authorized by the Contracting Officer. Where materials are transported in the prosecution of the work, vehicles shall not be loaded beyond the loading capacity recommended by the manufacturer of the vehicle or prescribed by any Federal, State or local law or regulation. When it is necessary to cross curbs or sidewalks, protection against damage shall be provided by the contractor and any damaged roads, curbs or sidewalks shall be repaired by, or at the expense of the contractor.

GC-5. PROGRESS CHARTS AND REQUIREMENTS FOR OVERTIME WORK. - a. The contractor shall within 5 days or within such time as determined by the Contracting Officer, after date of commencement of work, prepare and submit to the Contracting Officer for approval a practicable schedule, showing the order in which the contractor proposes to carry on the work, the date on which he will start the several salient features (including procurement of materials, plant and equipment) and the contemplated dates for completing the same. The schedule shall be in the form of a progress chart of suitable scale to indicate appropriately the percentage of work scheduled for completion at any time. The contractor shall enter on the chart the actual progress at the end of each week or at such intervals as directed by the Contracting Officer, and shall immediately deliver to the Contracting Officer three copies thereof.

b. If, in the opinion of the Contracting Officer, the contractor falls behind the progress schedule, the contractor shall take such steps as may be necessary to improve his progress and the Contracting Officer may require him to increase the number of shifts, and/or overtime operations, days

of work, and/or the amount of construction plant, and to submit for approval such supplemental schedule or schedules in chart form as may be deemed necessary to demonstrate the manner in which the agreed rate of progress will be regained, all without additional cost to the Government.

c. Failure of the contractor to comply with the requirements of the Contracting Officer under the provision shall be grounds for determination by the Contracting Officer that the contractor is not prosecuting the work with such diligence as will insure completion within the time specified. Upon such determination the Contracting Officer may terminate the contractor's right to proceed with the work, or any separable part thereof, in accordance with the delays-damages article of the contract.

GC-6. SUBCONTRACTORS. - At the request of the Contracting Officer the contractor shall notify the Contracting Officer, in writing, of the names of all subcontractors, together with a summary of the extent and character of the work to be done by each subcontractor. If for sufficient reason, at any time during the progress of the work, the Contracting Officer determines that any subcontractor is incompetent or undesirable, he will notify the contractor accordingly and immediate steps will be taken for cancellation of such subcontract. Subletting by subcontractors shall be subject to the same regulations. Nothing contained in this contract shall create any contractual relation between the subcontractor and the Government.

GC-7. QUALITY OF ARTICLES, MATERIALS AND EQUIPMENT. - a. Articles, materials, and equipment to be incorporated into the work under the contract shall be new and unused unless otherwise specified; and where required to conform to standard specifications or tests of the Government or other authorities incorporated by reference, will conform to the respective editions, including amendments, specified, or, where the editions are not specified will conform to the editions including amendments in effect on the date of the invitation for bids.

b. Any samples and descriptive data required shall:

(1) Be submitted within the time specified in these specifications or, if no time be specified, within a reasonable time before use to permit inspection and testing.

(2) Be shipped prepaid and delivered as specified in these specifications, or as directed by the Contracting Officer.

(3) Be properly marked to show the name of the material, trade name of manufacturer, place of origin, name and location of the project where the material represented by the sample is to be used, and the name of the contractor submitting the sample.

c. Samples not subjected to destructive tests may be retained until completion of the work but thereafter will be returned to the contractor, if he so requests in writing, at his own expense. Failure of any

sample to pass the specified requirements will be sufficient cause for refusal to consider further any samples from the same manufacturer whose materials failed to pass the tests.

GC-8. PROTECTION OF MATERIAL AND WORK. - The contractor shall at all times protect and preserve all materials, supplies and equipment of every description (including property which may be Government-furnished or owned) and all work performed. All reasonable requests of the Contracting Officer to inclose or specially protect such property shall be complied with. If, as determined by the Contracting Officer, material, equipment, supplies and work performed are not adequately protected by the contractor such property may be protected by the Government and the cost thereof may be charged to the contractor or deducted from any payments due to him.

GC-9. PROTECTION OF EXISTING STRUCTURES, UTILITIES, WORK AND VEGETATION. - a. Any damage to existing structures or work of any kind, or the interruption of a utility service resulting from failure to comply with the requirements of this contract shall be repaired or restored promptly by or at the expense of the contractor.

b. The contractor will preserve and protect all existing vegetation such as trees, shrubs, and grass on or adjacent to the site which do not unreasonably interfere with the construction as may be determined by the Contracting Officer. The contractor will be responsible for all unauthorized cutting or damaging of trees and shrubs, including damage due to careless operation of equipment, stock piling of materials or tracking of grass areas by equipment.

c. Care will be taken by the contractor in felling trees authorized for removal to avoid any unnecessary damage to vegetation that is to remain in place. Any limbs or branches of trees broken during such operations, shall be trimmed with a clean cut and painted with an approved tree pruning compound if required by the Contracting Officer. The contractor will be liable for or may be required to replace or restore at his own expense all vegetation not protected and preserved as required herein that may be destroyed or damaged.

GC-10. POSSESSION PRIOR TO COMPLETION. - The Government shall have the right to take possession of or use any completed or partially completed part of the work. Such possession or use shall not be deemed an acceptance of any work not completed in accordance with the contract. If such prior possession or use by the Government delays the progress of the work or causes additional expenses to the contractor, an equitable adjustment in the contract price and/or the time of completion will be made and the contract shall be modified in writing accordingly.

GC-11. SUSPENSION OF WORK. - The Contracting Officer may order the contractor to suspend all or any part of the work for such period of time as may be determined by him to be necessary or desirable for the convenience

of the Government. Unless such suspension unreasonably delays the progress of the work and causes additional expense to the contractor, no increase in contract price will be allowed. In the case of suspension of all or any part of the work for an unreasonable length of time causing additional expense, not due to the fault or negligence of the contractor, the Contracting Officer shall make an adjustment in the contract price in the amount of the additional proper expense and modify the contract accordingly. An extension of time for the completion of the work in the event of any such suspension will be allowed the contractor; provided however, that the suspension was not due to the fault or negligence of the contractor.

GC-12. LABOR REPORTS. - The contractor shall promptly furnish, and shall cause any subcontractors to furnish in like manner, within 7 days after the regular payment date of each weekly payroll, to the Contracting Officer, a copy of such payroll together with a sworn affidavit with respect to the wages paid each of its employees (which shall not be deemed to apply to persons in classifications higher than laborers and mechanics and those who are the immediate supervisors of such employees) engaged on the work. The contractor shall also prepare and furnish such labor reports as may be required by the Department of Labor.

GC-13. NOTICE TO THE GOVERNMENT OF LABOR DISPUTES. - Whenever the contractor has knowledge that any actual or potential labor dispute is delaying or threatens to delay the timely performance of the contract work, the contractor shall immediately give notice thereof, including all relevant information with respect thereto, to the Contracting Officer.

GC-14. CLEANING UP. - The contractor shall at all times keep the construction area, including storage areas used by him, free from accumulations of waste material or rubbish and prior to completion of the work remove any rubbish from and about the premises and all tools, scaffolding, equipment, and materials not the property of the Government. Upon completion of the construction the contractor shall leave the work and premises in a clean, neat and workmanlike condition satisfactory to the Contracting Officer.

GC-15. USE OF DOMESTIC ARTICLES. - Because the materials listed below, or the materials from which they are manufactured, are not mined, produced, or manufactured, as the case may be, in the United States in sufficient and reasonably available commercial quantities and of a satisfactory quality, their use in the work herein specified (subject to the requirements of the specifications) is authorized without regard to the country of origin:

Aluminum, pig or ingot
Antimony, as metal or oxide
Asbestos, amosite
Bismuth
Cadmium
Chrome ore or chromite
Cobalt, in cathodes
 rondelles or other
 primary forms
Copper refined, in ingots,
 cathodes or other
 refinery shapes
Cork, wood or bark and waste
Graphite, crystalline, flake

Jute and Jute burlaps
Lac and shellac
Logs, veneer, and lumber from
 Alaskan yellow cedar, balsa,
 greenheart, lignum vitae,
 mahogany and teak
Mercury
Mica
Nickel, primary, in ingots, pigs,
 shots, cathodes, or similar forms;
 nickel oxide and nickel salts
Rubber, crude and latex
Tin, in bars, blocks and pigs
Titanium, as sponge, ingot or other
 primary forms

GC-16. DEFINITIONS. - a. Wherever in the specifications or upon the drawings the words directed, required, ordered, designated, prescribed, or words of like import are used, it shall be understood that the direction, requirement, permission, order, designation, or prescription of the Contracting Officer is intended and similarly the words approved, acceptable, satisfactory, or words of like import shall mean approved by, or acceptable to, or satisfactory to the Contracting Officer, unless otherwise expressly stated.

b. Basic Rate as Used in Contract Article 21, "Eight-Hour Laws - Overtime Compensation", means the basic hourly straight time wage rate actually paid laborers and mechanics and is not necessarily the same as the minimum hourly rate referred to in Article 20, "Davis-Bacon Act", and in the paragraph of the specifications entitled "Rates of Wages".

GC-17. BONDS. - a. Payment Bond. - If the contract exceeds \$2,000, the contractor agrees to furnish a payment bond with good and sufficient surety or sureties acceptable to the Government for the protection of persons furnishing material or labor in connection with the performance of the work under this agreement on U. S. Standard Form No. 25-A or U. S. Standard Form No. 27 A. The penal sum of such payment bond will be as follows: (1) when the contract price is \$1,000,000 or less, 50 percent of the contract price; (2) when the contract price is in excess of \$1,000,000 but no more than \$5,000,000, 40 percent of the contract price; (3) when the contract price is more than \$5,000,000, \$2,500,000.

b. Performance Bond. - If the contract price exceeds \$2,000, the contractor further agrees to furnish a performance bond with good and sufficient surety or sureties acceptable to the Government in connection with the performance of the work under this agreement on U. S. Standard Form No. 25 or U. S. Standard Form No. 27. The penal sum of such performance bond will be 100 percent of the contract price.

c. Any bond required hereunder will be dated as of the same date as the contract and will be furnished by the contractor to the Government at the time the contract is executed.

GC-18. ACCIDENT PREVENTION. - In addition to full compliance with the requirements of the article of the contract entitled "Accident Prevention", the contractor will comply with the following provisions:

a. Prior to commencement of work the contractor will:

(1) Submit in writing to the Contracting Officer, his proposals for effectuating the provisions of the article of the contract entitled "Accident Prevention".

(2) Meet in conference with representative of the Contracting Officer to discuss and develop mutual understandings relative to administration of the overall safety program.

b. During the performance of work under the contract, the contractor shall comply with all procedures prescribed by the Contracting Officer for the control and safety of persons visiting the job site and will comply with such requirements to prevent accidents as may be specified under the Special Conditions of these specifications or issued by the Contracting Officer.

GC-19. INSPECTION. - The work will be conducted under the general direction of the Contracting Officer and is subject to inspection by his appointed inspectors to insure strict compliance with the terms of the contract. No inspector is authorized to change any provision of the specifications without written authorization of the Contracting Officer, nor shall the presence or absence of an inspector relieve the contractor from any requirements of the contract. As soon as practicable after the completion of the entire work, or any divisible part thereof as may be designated in these specifications, a thorough examination thereof will be made by the Contracting Officer at the site of the work. If such work is found to comply fully with the requirements of the contract, it will be accepted, and final payment therefor will be made in accordance with the article of the contract entitled "Payments to Contractors".

GC-20. ITEMS OF WORK - A brief description of each item and the estimated quantity thereof are shown in the schedule attached to the bid form and listed in the statement of work in the contract. Unless otherwise provided in the Special Conditions, within the limit of available funds, the contractor will be required to complete the work specified herein in accordance with the contract and at the contract price or prices.

GC-21. AUTHORIZATION AND CONSENT. - The Government hereby gives its authorization and consent (without prejudice to its rights of indemnification, if such rights are provided for in this contract) for all use and

manufacture, in the performance of this contract or any part hereof or any amendment hereto or any subcontract hereunder (including any lower-tier subcontract), of any patented invention (i) embodied in the structure of composition of any article the delivery of which is accepted by the Government under this contract, or (ii) utilized in the machinery, tools or methods the use of which necessarily results from compliance by the contractor or the using subcontractor with (a) specifications or written provisions now or hereafter forming a part of this contract, or (b) specific written instructions given by the Contracting Officer directing the manner of performance. The contractor's entire liability to the Government for patent infringement shall be determined solely by the provisions of the indemnity clause, if any, included in the contract and the Government assumes liability for all other infringement to the extent of the authorization and consent hereinabove granted.

GC-22. PATENT INDEMNITY (PREDETERMINED). - If the amount of this contract is in excess of \$5,000.00, the contractor shall indemnify the Government and its officers, agents, and employees against liability, including costs, for infringement of any United States Letters patent (except letters patent issued upon an application which is now or may hereafter be kept secret or otherwise withheld from issue by order of the Government) arising out of the manufacture or delivery of supplies or out of construction, alteration, modification, or repair of real property (hereinafter referred to as "construction work") under this contract, or out of the use or disposal by or for the account of the Government of such supplies or construction work. The foregoing indemnity shall not apply unless the contractor shall have been informed as soon as practicable by the Government of the suit or action alleging such infringement, and shall have been given such opportunity as is afforded by applicable laws, rules, or regulations to participate in the defense thereof; and further, such indemnity shall not apply if (i) the infringement results from compliance with specific written instructions of the Contracting Officer directing a change in the supplies to be delivered or in the materials or equipment to be used, or directing a manner of performance of the contract not normally used by the contractor or (ii) the infringement results from the addition to, or change in, the supplies furnished or construction work performed, which addition or change was made subsequent to delivery or performance by the contractor; or (iii) the claimed infringement is settled without the consent of the contractor, unless required by final decree of a court of competent jurisdiction.

GC-23. NOTICE AND ASSISTANCE REGARDING PATENT INFRINGEMENT. - The provisions of this clause shall be applicable only if the amount of this contract is in excess of \$5,000.

a. The contractor shall report to the Contracting Officer, promptly and in reasonable written detail, each notice or claim of patent infringement based on the performance of this contract of which the contractor has knowledge.

b. In the event of litigation against the Government on account of any claim of patent infringement arising out of the performance of this contract or out of the use of any supplies furnished or work or services performed hereunder, the contractor shall furnish to the Government upon request, all evidence and information in possession of the contractor pertaining to such litigation. Such evidence and information shall be furnished at the expense of the Government except in those cases in which the contractor has agreed to indemnify the Government against the claim being asserted.

GC-24. REPORTING OF ROYALTIES. - The provisions of this clause shall be applicable only if the amount of the contract is in excess of \$50,000.

a. The contractor shall report in writing (in quadruplicate) to the Contracting Officer as soon as practicable after execution of this contract whether or not any royalties in excess of \$250.00 have been paid or are to be paid by the Contractor directly to any person or firm in connection with the performance of this contract. If royalties in excess of \$250.00 have been paid or are to be paid to any person or firm, the report shall include the following items of information with respect to such royalties (including the initial \$250.):

(1) The name and address of each licensor to whom royalties in excess of \$250.00 have been paid or are to be paid.

(2) The patent numbers, patent application serial numbers (with filing dates), or other identification of the basis for such royalties.

(3) The manner of computing the royalties consisting of (i) a brief identification of each royalty-bearing unit or process, (ii) the total amount of royalties, and (iii) the percentage rate or dollars and cents amount of royalties on each such unit or process; provided that if the royalties cannot be computed in terms of units or dollars and cents value, then other data showing the manner in which the contractor computes the royalties.

b. In lieu of furnishing a report under paragraph a, the contractor may furnish a single, consolidated report for each accounting period of the contractor during which the contractor has contracts with the Government, provided the contractor has requested and obtained the prior written approval of the Chief, Patents Division, Office of The Judge Advocate General. Such consolidated report shall be furnished, when the furnishing thereof has been approved, in the number of copies as approved, as soon as practicable after the close of the accounting period covered by the report. Such consolidated report shall be made in accordance with contractor's established accounting practice and shall include, for the accounting period, the total amount of royalties accruing to each licensor at a rate in excess of \$1,000 per annum on the contractor's over-all business, together with (i) the name and address of each such licensor, (ii) the patent numbers, patent application serial numbers (with filing dates), or other identification of the basis for such royalties, (iii) a brief description of the subject matter of the license under which royalties are charged, (iv) the percentage rate or unit

amount, or if the royalties do not accrue by rate or unit amount, such other data showing the manner by which the royalties accrue to licensor, and (v) an estimate or approximation (without detailed accounting) of the portion of such royalties that may be attributable to Government contracts. The contractor shall, if requested by the Government, furnish at Government expense a more detailed allocation of such royalty payments attributable to Government contracts.

c. In the event that the contractor requests written approval to furnish consolidated reports under paragraph b above, the Chief, Patent Division, Office of the Judge Advocate General shall promptly consider the request and furnish to the contractor a letter stating whether or not the request is approved and, notwithstanding any such approval, the Contracting Officer shall have the right to question any such subsequently furnished report as to accuracy or completeness of data and to ask for additional information. The contractor shall furnish a copy of such letter of approval to the Contracting Officer administering this contract.

d. After payment of eighty percent (80%) of the amount of this contract, as from time to time amended, further payment shall be withheld until a reserve of either (i) ten percent (10%) of such amount or (ii) \$5,000, whichever is less, shall have been set aside, such reserve or the balance thereof to be retained until the contractor shall have furnished to the Contracting Officer the report called for by paragraph a hereof or the copy of the letter approving the contractor's request to furnish the report under paragraph b; provided, that no amount shall continue to be withheld from payment for the causes specified in this paragraph d if the Contracting Officer shall find that the contractor has not been furnished a letter as required by paragraph c within a reasonable time after making written request to submit a single, consolidated report under the provisions of paragraph b of this clause; and provided further, that the Contracting Officer may, in his discretion, order payment to be withheld in the amount and manner above provided if the report called for by paragraph a is unsatisfactory or if the Chief, Patent Division, Office of the Judge Advocate General notifies the Contracting Officer that the report called for by paragraph b is due but has not been received, or if received is found to be unsatisfactory. No amount shall be withheld under this paragraph when the minimum amount specified by this paragraph is being withheld under other provisions of this contract. The withholding of any amount or subsequent payment thereof to the contractor shall not be construed as a waiver of any right accruing to the Government under this contract.

GC-25. PRIORITIES, ALLOCATIONS AND ALLOTMENTS. - The contractor agrees, in the procurement and use of materials required for the performance of this contract, to comply with the provisions of all applicable rules and regulations of the Business and Defense Services Administration, including Defense Materials System Regulations.

PART III
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PART III

SPECIAL CONDITIONS

SC-1. COMMENCEMENT, PROSECUTION AND COMPLETION. - a. General. -

The contractor will be required to commence work under this contract within fifteen calendar days after the date of receipt by him of notice to proceed and to complete the entire work under each lot ready for use not later than one hundred and twenty (120) calendar days after the date of receipt by him to proceed. The time stated for completion shall include final clean-up of the premises.

b. Description of Lots. - (1) Lot A includes all work at Hartford and East Hartford, Connecticut.

(2) Lot B includes all work at Chicopee, Massachusetts.

(3) Lot C includes all work at Holyoke and Northampton, Massachusetts.

SC-2. PAYMENTS. - Payments will be made as provided in the article of the contract entitled "Payments to Contractors". Unless otherwise authorized in writing by the Contracting Officer, the items of work for which payment will be made shall be limited to those listed and enumerated in the contract. The unit prices or lump sum price or prices stated in the contract will be used in determining the amount to be paid and shall constitute full and final compensation for all the work.

SC-3. DESCRIPTION OF BID ITEMS. - a. Improvement Measures. - Payment for all work as specified in these specifications and as shown on the contract drawings, except pressure grouting of existing underground structures, will be made at the applicable lump sum contract prices for "Improvement Measures", which prices shall include the costs of excavation, embankments, filling, backfilling, grading, hauling, compacting, all concrete work, reinforcing steel, drilling dowel and anchor holes, dowels, anchors, sandblasting, furnishing and installing rubber water stops and joint seals, piezometers, and all other materials and work necessary to complete the work as indicated on the drawings and covered in these specifications.

b. Pressure Grouting of Existing Underground Structures. - See Section 4.

SC-4. CONTRACT DRAWINGS, MAPS AND SPECIFICATIONS. - a. Ten (10) sets of contract drawings, maps and specifications will be furnished the contractor without charge. Additional sets will be furnished on request at the cost of reproduction and only in cases where the same are necessary for performance of the contract.

b. The work shall conform to the following contract drawings and maps, all of which form a part of these specifications and are available in the office of the U. S. Army Engineer Division, New England, Corps of Engineers, 150 Causeway Street, Boston 14, Massachusetts; and the U. S. Army Engineer Division, New England, Area Office No. 5, 310 State Street, Springfield, Massachusetts.

<u>Title</u>	<u>Sheet No.</u>	<u>Drawing No.</u>	<u>Revision No.</u>
Lot A			
<u>Hartford and East Hartford</u>			
General Plan & Index - Hartford	1 of 15	CT-4-4098	-
Plan & Profile No. 1 - Hartford	2 of 15	CT-4-4099	-
" " " No. 2 - "	3 of 15	CT-4-4100	-
" " " No. 3 - "	4 of 15	CT-4-4101	-
" " " No. 4 - "	5 of 15	CT-4-4102	-
" " " No. 5 - "	6 of 15	CT-4-4103	-
" " " No. 6 - "	7 of 15	CT-4-4104	-
" " " No. 7 - "	8 of 15	CT-4-4105	-
" " " No. 8 - "	9 of 15	CT-4-4106	-
General Plan - East Hartford	10 of 15	CT-4-4107	-
Plan & Profile - East Hartford	11 of 15	CT-4-4108	-
Details No. 1	12 of 15	CT-4-4109	-
Details No. 2	13 of 15	CT-4-4110	-
Plan and Record of Foundation Explorations - Hartford	14 of 15	CT-2-1488	-
Plan and Record of Foundation Explorations - E. Hartford	15 of 15	CT-2-1490	-

Lot B			
<u>Chicopee</u>			
General Plan & Index	1 of 7	CT-4-4111	-
Plan & Profile No. 1	2 of 7	CT-4-4112	-
" " " No. 2	3 of 7	CT-4-4113	-
" " " No. 3	4 of 7	CT-4-4114	-
Details No. 1	5 of 7	CT-4-4115	-
Details No. 2	6 of 7	CT-4-4116	-
Record of Foundation Exploration	7 of 7	CT-2-1489	-

<u>Title</u>	<u>Sheet No.</u>	<u>Drawing No.</u>	<u>Revision No.</u>
Lot C			
<u>Holyoke and Northampton</u>			
General Plan No. 1 - Holyoke	1 of 14	CT-4-4118	-
" " No. 2 - "	2 of 14	CT-4-4119	-
" " No. 3 - "	3 of 14	CT-4-4120	-
Plan & Profile No. 1 - Holyoke	4 of 14	CT-4-4121	-
" " " No. 2 - "	5 of 14	CT-4-4122	-
" " " No. 3 - "	6 of 14	CT-4-4123	-
" " " No. 4 - "	7 of 14	CT-4-4124	-
Detail Plan & Profile No. 5 - Holyoke	8 of 14	CT-4-4125	-
Plan & Profile No. 6 - Holyoke	9 of 14	CT-4-4126	-
General Plan - Northampton	10 of 14	CT-4-4127	-
Plan & Profile No. 7 - Northampton	11 of 14	CT-4-4128	-
Details No. 1	12 of 14	CT-4-4129	-
Details No. 2	13 of 14	CT-4-4130	-
Plan and Record of Exploration	14 of 14	CT-2-1491	-

SC-5. SHOP DRAWINGS AND DESCRIPTIVE DATA. - The contractor shall submit to the Contracting Officer for approval five copies of all shop drawings and descriptive data as called for under the various headings of these specifications. These drawings and data shall be complete and shall contain all required detailed information. If approved by the Contracting Officer, each copy of the drawings or data will be identified as having received such approval by being so stamped and dated. The contractor shall make any corrections required by the Contracting Officer. Four sets of all shop drawings and descriptive data will be retained by the Contracting Officer and one set will be returned to the contractor. The approval of the drawings or the descriptive data by the Contracting Officer shall not be construed as a complete check, but will indicate only that the general method of construction and detailing is satisfactory. Approval of such drawings and data will not relieve the contractor of the responsibility for any error which may exist as the contractor shall be responsible for the dimensions and design of adequate connections, details and satisfactory construction of all work.

SC-6. PHYSICAL DATA. - Information and data furnished or referred to below are not intended as representations or warranties but are furnished for information only. It is expressly understood that the Government will not be responsible for any interpretation or conclusions drawn therefrom by the contractor.

a. Weather Conditions. -

(1) WEATHER STATION: Springfield Armory

Years of Record: Temp: 58 Precip: 58
Annual Temp. Average: 50.2 An. Total Precip: 43.85

<u>Month</u>	<u>Average Temp.</u>	<u>Average Precip.</u>
January	27.5	3.40
February	27.5	3.42
March	37.0	3.62
April	48.5	3.30
May	59.1	3.72
June	68.1	3.78
July	73.1	4.27
August	71.4	4.24
September	63.8	3.60
October	53.9	3.71
November	42.2	3.51
December	30.8	3.28

(2) WEATHER STATION: Hartford Brainard Field

Years of Record: Temp: 68 Precip: 94
Annual Temp. Average: 49.7 An. Total Precip: 42.43

<u>Month</u>	<u>Average Temp.</u>	<u>Average Precip.</u>
January	27.0	3.74
February	27.5	3.03
March	36.9	3.53
April	47.4	3.55
May	58.9	3.77
June	67.7	3.76
July	72.7	3.93
August	70.4	3.67
September	63.1	3.41
October	52.6	2.70
November	41.7	3.85
December	30.1	3.49

b. Transportation Facilities. - It will be the responsibility of the contractor to make his own investigation of transportation facilities and he will make his own arrangements for their use.

SC-7. RATES OF WAGES. - a. General. - The minimum wages to be paid laborers and mechanics on this project, as determined by the Secretary of Labor to be prevailing for the corresponding classes of laborers and mechanics employed on projects of a character similar to the contract work in the pertinent locality, are as set forth below.

b. Rates. - Any class of laborers and mechanics not listed below, employed on this contract, shall be classified or reclassified conformably to the schedule set out below by mutual agreement between the contractor and class of labor concerned, subject to the prior approval of the Contracting Officer. In the event the interested parties cannot agree on the proper classification or reclassification of a particular class of laborers and mechanics to be used, the questions, accompanied by the recommendation of the Contracting Officer, shall be referred to the Secretary of Labor for final determination.

(Predetermination No. R-20,124 dated 9 May 1957 for
Remedial Work on Flood Walls, Hartford and East
Hartford, Hartford County, Connecticut)

	<u>Per Hour</u>		<u>Per Hour</u>
Asbestos workers	\$3.25	Lathers	\$3.75
" " improvers:		Lead burners	3.75
1st year	1.625	Marble setters	3.40
2nd "	1.95	Machinery movers & riggers	3.55
3rd "	2.275	Painters	2.85
4th "	2.60	" riding steel	3.25
Boilermakers	3.60	" spray	5.70
" helpers	3.20	Piledrivermen	2.975
Bricklayers (Building)	3.40	Plasterers	3.40
" (Heavy and Highway):		Plumbers	3.32
Bricklayers	3.40	Roofers: Composition	3.00
Cement masons	3.40	Slate and tile	3.30
Stone masons	3.40	Helpers, Class "A"	2.425
Carpenters (Building)	2.975	" Class "B"	1.85
" (Heavy and Highway)	3.10	Sheet metal workers	3.15
Cement masons	3.40	Soft floor layers (linoleum)	2.975
Electricians	3.40	Steam fitters	3.35
Elevator constructors	3.28	Stone masons	3.40
" " helpers	2.30	" cutters	2.80
Glaziers	3.08	Sprinkler fitters	3.35
Ironworkers, structural	3.55	Terrazzo workers	3.40
" ornamental	3.55	Tile setters	3.40
" reinforcing	3.55	" " helpers	2.10
Laborers: (Building)		Truck drivers: 2 axle	2.10
Laborers	2.23	3 axle	2.20
Air tool op. (Jackhammer, vibrator)	2.23	Welders-receive rate prescribed	
Mason tenders	2.23	for craft performing operation	
Mortar mixers	2.23	to which welding is incidental.	
Pipe layers (concrete and clay)	2.23	Line construction:	
Plasterers' tenders	2.23	Linemen	2.85
		Groundmen	1.90
		" truck drivers	2.14

Apprentice Schedule											
Period and Rate *											
Craft	Interval	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
Glaziers	6 mos.	55	55	60	65	70	80				
Bricklayers(Bldg)	6 mos.	40	45	50	60	70	80				
Carpenters(Bldg)	1000 hrs.	40	45	50	55	60	65	72	80		
Plumbers	6 mos.	40	45	50	55	60	65	70	75	80	85
Sheet metal wkrs.	6 mos.	40	45	50	55	60	65	70	80		
Sprinkler fitters	6 mos.	63	66	69	72	75	78	81	84	87	90
Electricians	6 mos.	40	45	50	55	60	65	70	75	80	80
Ironworkers	1000 hrs.	50	60	70	80						
Roofers	6 mos.	70	75	80	85	90	95				
Steam fitters	year	50	60	70	80	90					
Painters	1000 hrs.	40	45	50	55	65	75				
Linemen	year	\$1.80	1.92	2.14	2.42						
Plasterers	1000 hrs.	40	45	50	60	70	80				
Lathers	1500 hrs.	50	62½	75	87½						
Lead burners	3 mos.	30	next 9 mos.	35							
" "	year		40	50	60	75					

* The apprentice rate is by percentage of the journeymen's rate unless otherwise indicated.

Building Construction

Per Hour

Power equipment operators:

Hoisting and handling steel	\$3.39
Setting stone	3.39
Derrick operator	3.39
Hoisting engineers, 2 drum or over	3.39
Hoisting engineer	3.20
Pile driver operator	3.20
Power shovel and crane operator	3.20
Dragline operator	3.20
Trenching machine operator	3.20
Post digger	3.20
Well digger	3.20
Test boring machine	3.20
Maintenance men	3.20
All conveyors (regardless of motive power)	3.20
High pressure portable boiler	3.20
All types of equipment used for hoisting(regardless of motive power or operation)	3.20
Front end loader (¾ cu. yd. and over)	3.20
Front end loader (under ¾ cu. yd.)	2.95
Concrete mixer operator (5 bags or over)	2.95
Air or steam valve operator (inside or outside job)	2.93
Electric transformer welding machine operator	2.93

<u>Building Construction</u>	<u>Per Hour</u>
Power equipment operators: (cont'd)	
Compressor operator	\$2.93
Pumps and well points	2.93
Welding machines	2.93
Steam ginney operator	2.85
Grader operator	2.85
Fork lifter	2.85
Mechanical heaters - all types	2.85
Carryall operator	2.85
Bulldozer operator	2.85
Concrete mixer operator (under 5 bags)	2.75
Mechanic engineer	2.65
Fireman	2.65
Oiler	2.30
Master mechanic	3.20
<u>Heavy and Highway Construction</u>	
Laborers:	
Laborers	2.05
Pavers, rammers, curb setters	2.575
Pipe layers	2.15
Hod carriers and jackhammermen	2.20
Wagon drill operators	2.30
Blasters	2.55
Power equipment operators:	
Erecting and handling steel	3.39
Pile driver operator	3.20
Power shovel and crane operator	3.20
Dragline operator	3.20
Trenching machine operator	3.20
Lighter derrick operator	3.20
Paver operator, Barber Greene or asphalt operator	3.20
Stiff leg and Guy derrick operator	3.20
Joy drill operator (limited to joy heavy weight champion or similar equipment)	3.20
Steel pile sheeting operator	3.20
Side boom operator	3.20
Mucking machine operator	3.20
Pumpcrete operator	3.20
Rock boring machine operator	3.20
Earth boring machine operator	3.20
Post hole digger	3.20
Well digger	3.20
Front end loader	2.95
Well points system	2.93
Asphalt roller operator	2.65

<u>Heavy and Highway Construction</u>		<u>Per Hour</u>
Power equipment operators: (cont'd)		
Roller operator		\$2.65
Grader operator		2.65
Carryall operator		2.65
Bulldozer operator		2.65
Fork lifter		2.65
Finishing machine operator		2.65
Asphalt plant operator		2.65
Firemen - high pressure		2.65
Power pavement breaker operator		2.65
Dincky machine operator		2.65
Repair engineer (outside)		2.65
Compressor operator		2.57
Pump operator		2.57
Repair engineer (inside)		2.35
Oiler		2.30
Batch plant operator		2.30
Bulk cement plant operator		2.30
Master mechanic		3.20
Truck drivers:		
2 axle		2.25
3 axle		2.35
2 axle, ready-mix		2.35
3 axle, ready-mix		2.40
Heavy duty trailers, up to 40 tons		2.40
Heavy duty trailers, 40 tons and over		2.45
Helpers		2.25
Specialized earth moving equipment other than conventional type on the road - truck and semitrailers including Euclids		2.50

(Predetermination No. R-18,570 dated 10 May 1957 for
Remedial Work on Flood Walls, Chicopee, Hampden
County, Massachusetts)

	<u>Per Hour</u>		<u>Per Hour</u>
Bricklayers	\$3.525	Power equip. oper. (Heavy	
Carpenters	2.825	and Highway)	
Cement masons	3.525	Piledrivermen	3.25
Electricians	3.05		
Ironworkers, reinforcing	3.53	Welders - Receive rate prescribed	
Laborers (Heavy and Highway)	2.05	for craft performing operation	
Jackhammer	2.30	to which welding is incidental	
Hod carrier - wagon drill	2.30		
Blaster & powderman	2.55	Truck drivers: 2 axle	2.195
Block paver - rammers - curb		3 axle	2.25
setters	2.80	Euclids	2.45

Apprentice Schedule									
Period and Rate *									
Craft	Interval	1st	2nd	3rd	4th	5th	6th	7th	8th
Bricklayers	1000 hrs.	50	55	65	75	85	95		
Carpenters	" "	50	55	60	65	70	75	80	90
Cement masons	Bricklayers' rates								
Electricians	2000 hrs.	\$1.16	1.40	1.65	2.00				
Ironworkers, reinf.	1000 hrs.	50	60	66-2/3	66-2/3				

* The apprentice rate is by percentage of the journeymen's rate unless otherwise indicated.

Building, Heavy and Highway Construction	Per Hour
Power equipment operators:	
Shovel, crane, derricks, dragline, pile driver, road paver	
all three drum hoisting and trenching machine operators	\$3.25
Small mixer operators	2.15
Two bag mixer operators	2.65
Compressor up to and including 220 cu. ft.	2.25
Compressor 315 cu. ft. and over	2.70
Tournapull and scrapers, graders, bulldozers and tractors	2.80
Pumps	2.70
Boilers, road rollers, hoists, finishing machines, material	
spreaders, maintenance engineers and similar machines	2.725
Assistant or firemen on steam machines	2.65
Assistant or oilers other than steam machines	2.15
Master mechanics	3.25

(Predetermination No. R-20,054 dated 27 May 1957 for Remedial Work on Flood Walls, Holyoke, Hampden County, Massachusetts)

	Per Hour		Per Hour
Bricklayers	\$3.525	Welders - Receive rate	
Carpenters	2.80	prescribed for craft	
Cement masons	3.525	performing operation	
Electricians	3.05	to which welding is	
Ironworkers, structural	3.53	incidental.	
Ironworkers, reinforcing	3.53		
Laborers	2.05	Truck drivers:	
Block pavers, rammers, curb		2-axle	\$2.195
setters	2.80	3-axle	2.25
Hod carriers, wagon drill		Euclids	2.45
operators	2.30		
Blasters and powdermen	2.55		

Apprentice Schedule

Craft	Interval	Period and Rate *							
		1st	2nd	3rd	4th	5th	6th	7th	8th
Bricklayers	1000 hrs.	50	55	65	75	85	95		
Carpenters	2000 "	60	70	80	90				
Cement masons	1000 "	50	55	65	75	85	95		
Ironworkers	1000 "	50	60	66-2/3	66-2/3				
Electricians	1000 "	\$1.00	1.05	1.20	1.35	1.50	1.70	1.80	2.00

* The apprentice rate is by percentage of the journeymen's rate unless otherwise indicated.

Building, Heavy and Highway Construction

Per Hour

Power equipment operators:

Shovel, crane, derricks, dragline, pile driver, road paver all three drum hoisting and trenching machine operators	\$3.25
Small mixer operators	2.15
Two bag mixer operators	2.65
Compressor up to and including 220 cu. ft.	2.25
Compressor 315 cu. ft. and over	2.70
Tournapull and scrapers, graders, bulldozers and tractors	2.80
Pumps	2.70
Boilers, road rollers, hoists, finishing machines, material spreaders, maintenance engineers and similar machines	2.725
Assistant or firemen on steam machines	2.65
Assistant or oilers other than steam machines	2.15
Master mechanics	3.25

(Predetermination No. R-20,053 dated 27 May 1957 for
Remedial Work on Flood Walls, Northampton, Hampshire
County, Massachusetts)

Per Hour

Per Hour

Bricklayers	\$3.125	Welders - Receive rate	
Carpenters	2.75	prescribed for craft	
Cement masons	3.275	performing operation	
Electricians	3.10	to which welding is	
Ironworkers, structural	3.53	incidental.	
Ironworkers, reinforcing	3.53		
Laborers	2.05	Truck drivers:	
Block pavers, rammers, curb setters	2.80	2-axle	2.195
Hod carriers, wagon drill operators	2.30	3-axle	2.25
Blasters and powdermen	2.55	Euclids	2.45

Apprentice Schedule								
Period and Rate *								
Craft	Interval	1st	2nd	3rd	4th	5th	6th	7th
Ironworkers	1000 hrs.	50	60	66-2/3	66-2/3			
Electricians	1000 "	37.5	42.5	47.5	52.5	62.5	67.5	75

* The apprentice rate is by percentage of the journeymen's rate unless otherwise indicated.

Building, Heavy and Highway Construction	Per Hour
Power equipment operators:	
Shovel, crane, derricks, dragline, pile driver, road paver	
all three drum hoisting and trenching machine operators	\$3.25
Small mixer operators	2.15
Two bag mixer operators	2.65
Compressor up to and including 220 cu. ft.	2.25
Compressor 315 cu. ft. and over	2.70
Tournapull and scrapers, graders, bulldozers and tractors	2.80
Pumps	2.70
Boilers, road rollers, hoists, finishing machines, material	
spreaders, maintenance engineers and similar machines	2.725
Assistant or firemen on steam machines	2.65
Assistant or oilers other than steam machines	2.15
Master mechanics	3.25

c. Health and Welfare Funds. - The wage rates contained in this decision are straight hourly wage rates. In some areas management and labor organizations in the construction industry have collectively bargained for health and welfare contributions. Such contributions are not included in wage rates determined by the Secretary of Labor for construction projects.

d. Apprentice Registration. - Apprentices employed pursuant to this determination of wage rates must be registered in a bona fide apprenticeship program registered with a State apprenticeship agency recognized by the Federal Committee on Apprenticeship, U. S. Department of Labor; or if no such recognized agency exists in a State, it shall mean a program registered with the Bureau of Apprenticeship, U. S. Department of Labor.

SC-8. GOVERNMENT-FURNISHED PROPERTY. - No property will be furnished by the Government.

SC-9. WATER. - The responsibility shall be upon the contractor to provide and maintain at his own expense an adequate supply of water for his use for construction and domestic consumption, and to install and maintain necessary supply connections and piping for same, but only at

such locations and in such manner as may be approved by the Contracting Officer. All water shall be carefully conserved. Before final acceptance, temporary connections and piping installed by the contractor shall be removed in a manner satisfactory to the Contracting Officer.

SC-10. **ELECTRICITY.** - All electric current required by the contractor shall be furnished at his own expense. All temporary connections for electricity shall be subject to the approval of the Contracting Officer. All temporary lines will be furnished, installed, connected, and maintained by the contractor in a workmanlike manner satisfactory to the Contracting Officer, and shall be removed by the contractor in like manner at his expense prior to the completion of the construction.

SC-11. **DAMAGE TO WORK.** - The responsibility for damage to any part of the permanent work shall be as set forth in the article of the contract entitled "Permits and Responsibility for Work". However, if, in the judgment of the Contracting Officer, any part of the permanent work performed by the contractor is damaged by flood or earthquake, which damage is not due to the failure of the contractor to take reasonable precautions or to exercise sound engineering and construction practices in the conduct of the work, the contractor will make the repairs as ordered by the Contracting Officer and full compensation for such repairs will be made at the applicable contract unit or lump sum prices as fixed and established in the contract. If, in the opinion of the Contracting Officer, there are no contract unit or lump sum prices applicable to a part of such work, an equitable adjustment pursuant to Article 3, Changes, of the contract, will be made as full compensation for the repairs of that part of the permanent work for which there are no applicable contract unit or lump sum prices. Except as herein provided, damage to all work (including temporary construction), utilities, materials, equipment and plant shall be repaired to the satisfaction of the Contracting Officer at the contractor's expense, regardless of the cause of such damage.

SC-12. **LAYOUT OF WORK.** - a. The contractor shall lay out his own work and shall be responsible for all measurements that may be required for the execution of the work to the locations and limits prescribed in the specifications or on the contract drawings, subject to such modifications as the Contracting Officer may require to meet changed conditions or as a result of necessary modifications to the contract work.

b. The contractor shall furnish, at his own expense, all stakes, templates, platforms, equipment, tools and materials, and all labor as may be required in laying out any part of the work.

SC-13. **QUANTITY SURVEYS.** - a. Personnel and Materials. - The contractor shall furnish all personnel, equipment and material required to make such surveys as are necessary to determine the quantities of

work performed or in place. Government personnel will act as observers only. All original field notes, computations, and other records taken by the contractor for the purpose of quantity surveys shall be furnished promptly to the representative of the Contracting Officer at the site of the work; they shall become the property of the Contracting Officer and shall be used to the extent necessary in determining the amounts of payments due to the contractor under the article of the contract entitled "Payment to Contractors".

b. Authority. - Unless waived in each specific case, quantity surveys shall be made under the direction of a representative of the Contracting Officer.

SC-14. CONTRACT DELAYS CAUSED BY OPERATION OF PRIORITIES AND ALLOCATIONS SYSTEM. - The Government will take no action pursuant to Article 5, "Termination for Default-Damages for Delay-Time Extensions", to terminate the right of the contractor to proceed or to assess actual damages where the failure of the contractor to complete the work within the time specified elsewhere in this contract is due solely to the operation of the priorities and allocations system and is not otherwise caused by the fault or negligence of the contractor. It is understood and agreed that such delays will be considered as due to an act of the Government and as such will be excusable within the meaning of subparagraph (c) of the "Termination for Default-Damages for Delay-Time Extensions" article, and the contractor will be entitled to time extension by reason thereof.

SC-15. ACCIDENT PREVENTION. - a. The contractor's proposals for effectuating the provisions of the article of the contract entitled "Accident Prevention" shall be submitted in quadruplicate to the Area Engineer as the Contracting Officer's representative. (See Paragraph GC-18. ACCIDENT PREVENTION.)

b. Compliance with Manual "Safety Requirements". - In order to provide safety controls for protection to the life and health of employees and other persons; for prevention of damage to property, materials, supplies, and equipment; and for avoidance of work interruptions in the performance of this contract, the contractor will comply with all pertinent provisions of the Manual "Safety Requirements" approved by the Chief of Engineers, 16 December 1941, as revised 16 April 1951, and as may be further amended and will also take or cause to be taken such additional measures as the Contracting Officer may determine to be reasonably necessary for the purpose.

SC-16. CONCRETE AGGREGATE - APPROVED SOURCES. - Concrete aggregate meeting the requirements of these specifications can be produced from the approved sources listed below:

Sherman Sand and Stone Company, New Britain, Connecticut
Dunning Sand and Gravel Company, Farmington, Connecticut
Edward Balf Company, Hartford, Connecticut
D. D. Ruxton, Ludlow, Massachusetts
North Wilbraham Sand and Gravel Company, North Wilbraham, Mass.

Concrete aggregate may be furnished from any of the above-listed sources, or at the option of the contractor may be furnished from any other source, or sources, approved by the Contracting Officer. The contractor shall submit aggregate for approval testing and for proportioning of mix as soon as notice to proceed is given in order to meet the completion schedule. The contractor will designate in writing the source or sources, from which he will furnish aggregate. If the fine aggregate and coarse aggregate are not to be furnished from the same source, the contractor will supply for each lot coarse aggregate from one source only and fine aggregate from one source only. If the contractor proposes to furnish aggregate from a source, or sources not already approved, he may designate only one source for both coarse and fine aggregate or one source for each. Samples for testing and proportioning of mix if required shall be provided by the contractor. If a source proposed by the contractor is not approved for use as determined by the Contracting Officer, the contractor shall furnish aggregate from an approved source listed above at no additional cost to the Government. Approval of a source of concrete aggregate is not to be construed as approval of all material from that source. The right is reserved to reject materials from certain localized areas, zones, strata or channels, when such materials are unsuitable for concrete aggregate as determined by the Contracting Officer. Materials produced from an approved source shall meet all of the grading, uniformity, and particle shape requirements of Section 2 of the Technical Provisions of these specifications.

SC-17. ACCOMMODATIONS FOR INSPECTORS. - a. Inspector's Offices. - The contractor under Lot A or Lot C, as applicable, shall provide a suitable inspector office at Hartford, Connecticut. This office shall be approximately 120 square feet and shall be provided within 5 days after commencement of work. The office shall be weathertight and free from drafts, mounted on skids or on wheeled trailers, and located within the limits of the contractor's work area where directed. The office shall be equipped with a cylinder lock on the door, a plywood top table approximately 6' x 4', and with adequate heating, lighting and ventilating facilities. Suitable temporary toilet facilities shall be provided by the contractor.

b. Payment. - Separate payment will not be made for inspector's office, but all costs therefor shall be included in the overall cost of the work. These facilities shall be provided for the duration of the contract plus any extensions therefor. Upon completion and acceptance of the work the buildings will become the property of the contractor and shall be removed from the site of the work.

SC-18. SAFETY SIGNS. - a. The contractor shall construct, erect and maintain one safety sign at Hartford, East Hartford, Chicopee, Holyoke and Northampton and at locations directed by the Contracting Officer. The safety signs shall be 6' x 3' in size and shall conform to the requirements of Drawing No. 40-05-06, Sheet 1 of 1, attached hereto.

b. No separate payment will be made for erecting and maintaining the signs; removal of the safety signs when the entire job is completed, and all costs in connection therewith will be considered a subsidiary obligation of the contractor.

SC-19. TEMPORARY HEAT. - All temporary heat required by the contractor in connection with his construction operations shall be furnished or provided by or at the expense of the contractor. No source of any Government type of heating system will be available for the use of the contractor. Heaters shall be listed by the Underwriter's Laboratories, Inc., and be installed and maintained in accordance with the manufacturer's instructions. The use of "salamanders" shall not be permitted.

SC-20. PROTECTION OF EXISTING UTILITIES. - a. General. - See Paragraph GC-9, "PROTECTION OF EXISTING STRUCTURES, UTILITIES, WORK AND VEGETATION" of GENERAL CONDITIONS.

b. Utilities Shown on Drawings. - Existing utilities that are shown on the drawings or the location of which is made known to the contractor prior to excavation shall be protected from damage during the excavation and backfilling, and if damaged, shall be repaired as soon as possible by the contractor at his expense. Materials below existing utilities which are removed or disturbed during excavation operations shall be replaced carefully during backfilling and thoroughly compacted to prevent future settlement and damage to the utility. Utilities damaged due to the subsequent settlement of the backfill shall be repaired by or at the expense of the contractor.

c. Utilities Not Shown on Drawings. - Any existing utility that is not shown on the drawings or the location of which is not known to the contractor in sufficient time to avoid damage, if inadvertently damaged during excavation, shall be repaired as soon as possible by the contractor, and adjustment in payment will be made by the Government. If extra expense is incurred by the contractor due to the existence of utilities that are not shown on the drawings or the location of which is not known to the contractor at the time of bidding, adjustment in payment will be made by the Government. The requirements of subparagraph b. above relative to excavation, backfilling and repair of utilities damaged due to settlement are applicable to this subparagraph.

SC-21. INTERFERENCE WITH OTHER CONTRACTORS. - The contractor for this work shall not interfere with materials, appliances, or workmen of the United States or of any other contractor who may have work at this site. As far as practicable, all contractors shall have equal rights to the use of all roads and grounds. In case of disagreement regarding such use, the decision of the Contracting Officer shall govern.

SC-22. IDENTIFICATION OF MECHANIZED EQUIPMENT. - All contractor's machinery, motor vehicles and mechanized equipment as may be required by the Contracting Officer, will have posted in a conspicuous place on each piece of equipment, acceptable identification showing the owner's name and an identifying number.

SC-23. SCHEDULE OF SAMPLES AND DATA TO BE SUBMITTED. - The following is a complete schedule of the shop drawings, samples and data designated in the various sections of the Technical Provisions to be submitted.

<u>Section No.</u>	<u>Descriptive Data</u>	<u>Samples</u>
1	None	None
2	None	Air-entraining agent, Aggregate (if required)
3	Anchor bars (if optional type)	Joint filler, synthetic rubber compound, rubber waterstops

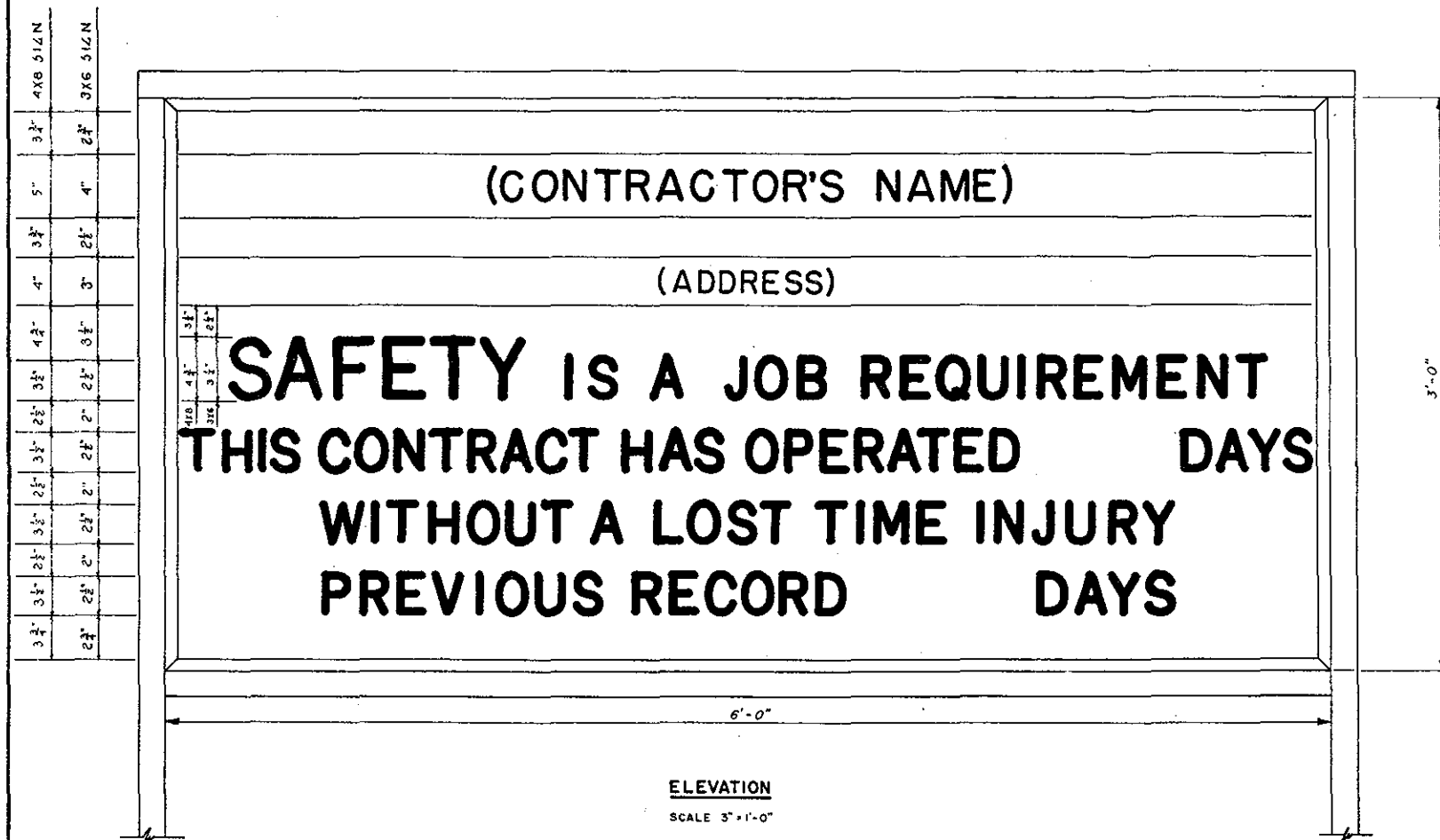
SC-24. CONTRACT BID BREAKDOWN. - The contractor shall furnish within 10 days after date of award of contract a breakdown of each lump sum bid in accordance with the following listing. Items which are inapplicable shall be omitted. Additional items if required, shall be added. Partial payments will be based on this breakdown. The contractor's breakdown will be reviewed by the Contracting Officer to insure that costs are proportioned properly between early and late pay items. Any unbalanced items or other discrepancies will be revised by the Contracting Officer and the approved breakdown will be utilized as a basis for progress payments to the contractor.

<u>Item</u>	<u>Amount</u>
- Earthwork (Excavation, borrow, fill)	
- Grading	
- Concrete	
- Reinf. Steel	
- Rubber water stops	
- Synthetic rubber compound	

SC-25. FACTORS AFFECTING THE PROSECUTION OF THE WORK. - a. Necessary rights of way for the work and access thereto will be furnished by the applicable cities and towns in which the work is being performed. The contractor shall not interfere with railroad service at the South Meadows Power Station in Hartford. All operations and use of work and storage areas shall be conducted so as to result in a minimum interference with operations of the affected industries and plants.

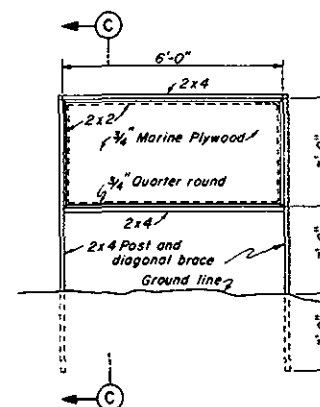
b. Access to Dwight Tailrace. - The Dwight Power Station of the Western Massachusetts Electric Company will be shut down to permit the grouting beneath the tailrace. Access to the tailrace may be gained from the downstream end. Grouting operations shall be conducted during a period of low water and scheduled to minimize the station shutdown period. The contractor shall make his own arrangements with the utility company relative to the shutdown period and shall perform all necessary cofferdam construction as required to perform the grouting work.

c. The contractor shall perform excavation operations to the extent only that wall treatments operations can immediately be commenced. At all times the existing flood protection facilities shall be maintained, as far as the contractor is involved, at the maximum protective condition possible.



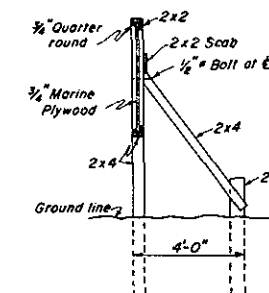
NOTE:

This elevation is of a 3' x 6' sign.
See specifications for size required
under this contract.



ELEVATION

3' x 6' SIGN
(4' x 8' SIGN SIMILAR)



SECTION C-C

SPECIFICATIONS

1. Posts, rails and bracing shall be No. 1 yellow pine or approved equal S4S-Fed. Spec. MM-L-751C.
2. All exposed surfaces shall be given one coat of linseed oil and wiped prior to primer coat.
3. All exposed surfaces shall be given one coat of exterior lead and oil primer-Fed. Spec. TT-P-25a and two finish coats of white exterior oil paint-Fed. Spec. TT-P-104.
4. Black lettering shall be Kem Bulletin Color C2081 as manufactured by Sherwin-Williams Co., or approved equal.
5. Marine Plywood shall conform to Mil. Spec. MIL-P-66A.

REVISION	DATE	DESCRIPTION	BY
CORPS OF ENGINEERS, U. S. ARMY OFFICE OF THE DIVISION ENGINEER NEW ENGLAND DIVISION BOSTON, MASS.			
DES BY C. W. P.	OR BY H. A.	CK BY J. M. L.	
SAFETY SIGN			
PROJECT ENGINEER SUBMITTED BY CHIEF MILITARY BRANCH APPROVED CHIEF ENGINEERING			
DATE JULY 1955			
SCALE AS SHOWN SPEC. NO. DRAWING NUMBER 40-05-06 SHEET 1 OF 1			

SECTION 1

EXCAVATION, FILLING AND BACKFILLING

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SECTION 1

EXCAVATION, FILLING AND BACKFILLING

1-01. SCOPE. - The work covered by this section of the specifications consists of furnishing all materials and equipment and performing all operations in connection with excavation, filling, backfilling and grading, complete, as hereinafter specified and in accordance with the applicable contract drawings.

1-02. EXCAVATION. - a. General. - Excavation shall be performed to the lines and grades required to perform the work specified in these specifications and as indicated. All excavation where necessary shall be suitably shored. Excavation shall be performed in such a manner so as not to damage the wall structure, existing underground drains and utilities and adjacent structures. At any time during the course of the work, should a flood be imminent and the foundation of the flood wall and any other below ground work be exposed, the Contracting Officer may order the contractor to place and compact backfill around the foundation of the wall and other existing below ground work to the original ground level. The contract price will be appropriately adjusted by change order for any additional backfilling and re-excavation ordered by the Contracting Officer due to flood danger.

b. It should be noted that various types of ground finish are existing on either side of the flood wall. The contractor shall be required to replace the type of finish existing prior to the new work. Riprap and other material shall be carefully saved for re-use where possible.

c. Excavated material will be inspected with respect to topsoil, organic materials, rubbish, trash, and oversize by the Contracting Officer, who will direct its removal to either a stockpile for re-use or to an off-site waste disposal area furnished by the contractor.

1-03. BACKFILLING. - a. Materials. - Materials from required excavation shall be used for backfilling and for riprap replacement. All other materials as may be required, including stone for riprap and gravel bedding, shall be furnished by the contractor and at his own expense, and at no additional cost to the Government. Material furnished by the contractor for backfilling shall be granular soil with not more than 15 percent by weight passing a No. 200 sieve, free of brush, roots and other perishable matter and from stones larger than one-half the thickness of a compacted layer.

b. Placement. - The backfill to a height of 12 inches over the wall base shall be placed in layers not over 4 inches thick (after compaction) and compacted with mechanical tampers. The remainder of the backfill may be compacted by rolling with mechanical tampers or mechanized equipment. Immediately before placing and spreading the material for a layer in the backfill, the surface of the preceding layer shall, when required, be uniformly moistened as directed. Fill material to be

compacted by mechanized equipment shall be spread in 6-inch layers (measured before compaction) and maintained approximately level at all times. Portions of backfill that cannot be reached by mechanized equipment shall be compacted in four-inch layers by means of mechanical tampers. The density attained with mechanical tampers shall equal that obtained by mechanized equipment. Should the rolled surface of any layer be in the opinion of the Contracting Officer, too smooth to bond with the succeeding layer, it shall be roughened or loosened by harrowing, or otherwise, to the satisfaction of the Contracting Officer before the succeeding layer is placed thereon. No payment or extra allowance will be made for the work ordered for the above reason. Should the material, as dumped, spread or moistened, be too wet to permit safe operation of the mechanized equipment or to permit the required degree of compaction as directed by the Contracting Officer, the rolling shall be delayed until the material has dried to the required consistency.

c. Mechanized Equipment. - Mechanical equipment shall be suitable for the proposed work and shall be approved by the Contracting Officer prior to use.

1-04. FILLS AND EMBANKMENTS. - a. Lines and Grades. - Fills and embankments shall be constructed to the lines and grades indicated on the drawings, unless otherwise directed by the Contracting Officer. The Government reserves the right to increase or decrease the foundation width or the embankment slopes or to make such other changes in the embankment sections as may be deemed necessary to provide a safe structure.

b. Materials. - Materials for embankment fill shall be obtained from off-site sources provided by the contractor and shall consist of essentially granular material free from trash, organic material, ashes, cinders, coal clinkers, frozen materials, and rocks or stones with maximum dimension greater than one-half the thickness of a compacted layer. Not more than 70 percent by weight shall pass the U. S. Standard No. 4 sieve, nor more than 10 percent by weight shall pass the No. 200 sieve. Materials for placement of fills shall conform to the applicable requirements of Paragraph 1-03 above.

c. Placement. - After stripping of the embankment foundation area, the surface shall be moistened if required and thoroughly compacted as hereinafter specified for compaction of fills. Fill material shall be spread and compacted as specified for backfills. The material in each layer of the fill shall contain the amount of moisture directed by the Contracting Officer, necessary to obtain the desired compaction as determined by the Contracting Officer. Mechanical equipment such as bulldozers, blade graders, tractors, and rollers shall not be permitted to operate within less than 4 feet of walls.

1-05. DISPOSAL OF EXCESS MATERIAL. - Excess material not required in the work and unsuitable materials shall be disposed of in disposal areas located off the site of the work and provided by the contractor.

No material shall be disposed of on adjacent property without the permission of the owner.

1-06. GRADING. - The areas on either side of the wall within the limits of the work shall be graded and stone protection and gravel bedding replaced true to grade, shaped to drain, and maintained free from extraneous accumulations until final inspection has been completed and the work has been accepted.

1-07. TURFING. - All permanent embankments placed on the landside of the flood wall at the locations and grades shown in the contract drawings, and all present turfed areas which are disturbed by the contractor's operations, shall be topsoiled and seeded. After required grading of the embankment area, a minimum of six inches of topsoil shall be placed and firmly compacted. The topsoil shall be free from sticks, stones, or other undesirable materials of diameter exceeding one inch and shall be of a type suitable for producing a heavy stand of permanent grass. The topsoil shall be obtained from required excavations or from sources selected by the contractor. Following topsoiling, the contractor shall apply suitable amounts of ground limestone and chemical fertilizer and till those materials into the top four inches of topsoil. Grass seeds of a type suitable for producing a heavy stand of permanent grass shall then be broadcast over the surface in suitable quantity. Any watering, mowing, refertilizing, reseeding, regrading or other repair measures required for development of a heavy stand of permanent grass shall be performed by the contractor. The contractor shall be responsible for the proper care of turfed areas during the period when the grass is becoming established. This period shall be for two months after completion of the planting on the entire project unless desired cover is established in a shorter period of time as determined by the Contracting Officer. Any method of fertilizing, seeding, or maintenance may be used which will produce a high quality lawn. The contractor will be entirely responsible for the results obtained.

1-08. PAYMENT. - No separate payment will be made for the work under this section and all costs in connection therewith will be included under the applicable contract prices.

SECTION 2

CONCRETE
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SECTION 2

CONCRETE

2-01. SCOPE OF THE WORK. - The work covered by this section consists of furnishing all material and equipment, and performing all labor for the manufacture, transporting, placing, finishing, and curing of concrete in these specifications.

2-02. COMPOSITION. - Concrete shall be composed of portland cement, water, fine and coarse aggregate and an air-entraining admixture.

2-03. QUALITY. - The concrete mixture will be designed by the Contracting Officer who will determine the required quality of the concrete covered by these specifications.

2-04. CEMENT. - a. General. - Cement may be furnished in bulk or it may be packaged.

b. Cement. - (1) Portland Cement shall conform to Federal Specification SS-C-192b, Type I.

(2) Natural cement shall conform to ASTM Standard C10-54, Type N.

c. Test Requirements. Cement will be accepted on the basis of a manufacturer's mill certificate of compliance with applicable referenced specification under which it is furnished. The soundness or autoclave expansion test for a blended cement shall be as specified in Federal Specification SS-C-158, and the maximum percentage of expansion permitted in the blended product shall not exceed the limit specified for the portland cement used in the blend.

d. Storage. - Cement shall be stored at the site of the work in an approved manner to prevent the absorption of moisture.

2-05. AIR-ENTRAINING ADMIXTURE. - a. General. - The air-entraining admixture shall be any approved substance or compound which will produce entrained air in the concrete as hereinafter specified. The air-entraining admixture shall be added to the batch in solution in a portion of the mixing water. This solution shall be batched by means of a mechanical batcher capable of accurate measurement and in such a manner as will insure uniform distribution of the admixture throughout the batch during the specified mixing period.

b. Tests. - The admixture proposed for use shall be selected 10 days in advance of the time concrete placing is started and the Contractor shall provide satisfactory facilities for the ready procurement of adequate test samples. All tests for the evaluation and approval of

an admixture will be made by and at the expense of the Government. The suitability of an air-entraining admixture for use will be based on tests prescribed in, and shall meet the requirements of, Corps of Engineers Serial No. CRD-C 13. An air-entraining admixture which has been in storage at the project site for longer than 6 months or which has been subjected to freezing shall not be used until retest proves it to be satisfactory.

2-06. AGGREGATES. - a. Composition. - Fine aggregate shall consist of natural sand, manufactured sand, or a combination of natural and manufactured sands. Coarse aggregate shall consist of gravel or crushed stone.

b. Sampling and Testing. - Tests, if necessary, will be made to determine the acceptability of the aggregates for use. Sampling and testing, when required, will be made by the Government and at its expense. See Paragraph SC-16.

c. Processed Aggregate. - The aggregate particles shall be clean, hard, unweathered and uncoated. The shape of the particles shall be generally cubical or spherical.

(1) Grading. - (a) Fine Aggregate. - The grading of the fine aggregate shall conform to the following requirements as delivered to the mixer:

<u>Sieve Designations</u> <u>(U. S. Standard Square Mesh)</u>	<u>Percentage by Weight</u> <u>Passing</u>
3/8 inch	100
No. 4	95-100
No. 16	45-80
No. 50	10-30
No. 100	2-10

(b) Coarse Aggregate. - The maximum size of coarse aggregate used under this contract shall be 1-1/2 inches (square mesh opening). The grading of the coarse aggregate shall conform to the following requirements as delivered to the mixer:

<u>Sieve Designation</u>	<u>Percentage by Weight Passing</u>
Max. size mesh screen (sq. mesh)	95-100
1/2 Max. mesh screen (sq mesh)	35-70
No. 4 sieve	0-5

d. Storage. - Aggregates shall be stored at the site in an approved manner so as to prevent the inclusion of foreign materials in the concrete.

2-07. WATER. - Water used in mixing and curing concrete shall be fresh, clean, and free from injurious amounts of sewage, oil, acid, alkali, salt, or organic matter.

2-08. PROPORTIONING OF CONCRETE. - Control. - The proportions of all materials entering into the concrete shall be as directed by the Contracting Officer. The proportions will be changed whenever such change is determined necessary to maintain the standard of quality required for the structures covered by these specifications.

b. Measurements. - All materials shall be measured by weight except the air-entraining admixture and water which may be measured by volume. In the event, the contractor proposes to furnish both portland and natural cements, the natural cement in the approved mix will not exceed 1 bag of natural cement to four bags of portland cement.

c. Cement Content. - The cement content in the concrete will be based on six (6) bags per cubic yard.

d. Aggregate Content. Concrete mixtures will be designed to use the maximum size and the maximum amount of coarse aggregate available and placeable in the work.

e. Entrained-air Content. - The total calculated air content of that portion of the concrete containing aggregate smaller than the 1-1/2-inch square mesh sieve shall be between 4 and 7 percent of the volume of the concrete based on measurements made on concrete immediately after discharge from the mixer. The quantity of air within this range shall be as directed and shall be changed whenever such change is determined necessary to meet the varying conditions encountered during construction.

f. Water Content. - The water content of all concrete mixtures will be the minimum necessary to properly place the mixture being used.

2-09. BATCHING AND MIXING. a. Equipment. The contractor shall provide at the site of the work a modern and dependable batch-type mixing plant of sufficient capacity to efficiently prosecute and accomplish the work. The equipment shall be capable of combining the aggregate, cement, admixture, and water into a uniform mixture and of discharging this mixture without segregation. Adequate facilities shall be provided for the accurate measurement and control of each of the materials entering the concrete. The complete plant assembly shall include provisions to facilitate the inspection of all operations at all times. Ready-mixed concrete from an approved plant may be used; in which case the mixing plant at the site will not be required. All requirements specified herein for concrete mixed at the site shall be applicable to ready-mixed concrete. The Contracting Officer shall have free access to the batching and mixing plant at all times.

b. Mixing Time. - When a truck mixer is used, each batch of concrete shall be mixed not less than 50 nor more than 100 revolutions at a mixing speed of not less than 4 rpm after all materials are in the mixer drum. The stationary mixer shall revolve a minimum of 12 revolutions after all materials have been placed therein, and at a uniform speed. Neither the speed nor the volume capacity of the mixer shall exceed those recommended by the manufacturer. Excessive over-mixing, requiring additions of water to preserve the required consistency will not be permitted. The mixing time for each batch, after all solid materials are in the mixer drum, provided that all the mixing water shall be introduced before one-fourth (1/4) of the mixing time has elapsed, shall be as follows:

<u>Capacity of Mixer</u>	<u>Mixing Time</u>
Less than 2 cubic yards	1-1/2 minutes
2 and 3 cubic yards	2 minutes

2-10. CONVEYING. - Concrete shall be conveyed from mixer to forms as rapidly as practicable, by methods which will prevent segregation or loss of ingredients.

2-11. PLACING. - a. General. - Concrete shall be worked into the corners and angles of the forms and around all reinforcement and embedded items without permitting the materials to segregate. Concrete shall be placed within thirty (30) minutes after it has been mixed unless otherwise authorized. It shall be placed on clean, damp surfaces free from water, ice, frost, mud, debris or objectionable coatings. Concrete shall be consolidated with the aid of mechanical vibrating equipment supplemented by handspading and tamping. Vibrating equipment shall be of the internal type and shall at all times be adequate to properly consolidate all concrete. All concrete placing equipment and methods shall be subject to approval.

b. Lifts in Concrete. - The permissible depth of concrete placed in each lift will be as shown on the drawings or specified herein. All concrete shall be deposited in horizontal layers approximately twenty (20) inches in thickness unless otherwise authorized or directed. The placement shall be carried on at such a rate that the formation of cold joints will be prevented.

2-12. JOINTS. - Joints shall be formed as indicated on the drawings and according to the details shown or as otherwise approved. All surfaces of old concrete on or against which new concrete is to be placed shall be thoroughly wet sandblasted or bush-hammered and kept wet for a minimum of twenty four (24) hours immediately prior to placement of new concrete. The sandblasting or bush-hammering operation shall be continued until all unsatisfactory concrete, and all laitance coatings, stains, debris, and other foreign substances are removed. The surfaces

shall then be washed thoroughly to remove all loose materials. All approximately horizontal surfaces shall be covered with a layer of sand-cement immediately prior to placing of new concrete. Rubber waterstops, synthetic rubber caulking compound, and bituminous fiber joint filler shall conform to requirements of Section 3.

2-13. FINISHING. - Defective concrete, voids left by the removal of tie rods, ridges and local bulging on all concrete surfaces permanently exposed to view or exposed to water on the finished structure, shall be repaired immediately after the removal of forms unless otherwise authorized or directed. Voids left by the removal of tie rods shall be roamed and completely filled with dry-patching mortar. Defective concrete shall be repaired by cutting out the unsatisfactory material and placing new concrete which shall be secured with keys, dovetails or anchors. Excessive rubbing of formed surfaces will not be permitted. All unformed surfaces of concrete, exposed in the completed work, shall have a wood float finish without additional mortar and shall be true to elevation as shown on the drawings. Other surfaces shall be brought to specified elevation and left true and regular. Finish of new work shall match existing adjacent undisturbed surfaces.

2-14. CURING AND PROTECTION. - All concrete shall be cured for a period of not less than fourteen (14) days by an approved method or combination of methods. All concrete shall be adequately protected from damage at all times.

2-15. FORMS. - a. Material. - Forms shall be of wood, steel, or other approved material. The type, size, shape, quality, and strength of all materials of which the forms are made shall be subject to approval.

b. Construction. - Forms shall be true to line and grade, mortar tight and sufficiently rigid to prevent objectionable deformation under load. The form surfaces shall be smooth, free from irregularities, dents, sags, or holes when used for permanently exposed faces. All exposed joints shall be chamfered and, unless otherwise indicated, all exposed edges shall be chamfered. Internal ties shall be so arranged that when the forms are removed all metal will be not less than 2 inches from concrete surfaces permanently exposed to view or exposed to water on the finished structure.

c. Coating. - Forms for exposed surfaces shall be coated with a nonstaining form oil, which shall be applied shortly before concrete is placed. Forms for unexposed surfaces may be thoroughly wetted in lieu of oiling, immediately before the placing of concrete, except that in freezing weather oil shall be used.

d. Removal. - Forms shall not be removed without approval. All form removals shall be accomplished in such a manner as to prevent injury to the concrete. Forms shall not be removed before expiration

of a minimum time of 48 hours except where otherwise specifically authorized. When conditions on the work are such as to justify the requirement, forms will be required to remain in place for longer periods.

2-16. WATERSTOPS. - Waterstops of rubber shall be installed in the joints as shown on the drawings or as otherwise directed. The contractor shall replace or repair, at his expense, any waterstops punctured or damaged before final acceptance of the work. Joints in waterstops shall be shop fabricated and no field splicing will be permitted.

2-17. FURNISHING AND PLACING STEEL REINFORCEMENT. - a. General. - The contractor shall furnish, cut, bend, and place all steel reinforcement as indicated on the drawings or otherwise required. All reinforcement shall be, when surrounding concrete is placed, free from loose, flakey rust and scale, and free from oil, grease, or other coating which might destroy or reduce its bond with the concrete. All placing shall be in accordance with drawings furnished or approved.

b. Cutting and Bonding. - Steel reinforcement may be mill or field bent. All bending shall be in accordance with standard approved practice and by approved machine methods.

c. Quality. - The steel reinforcement shall conform to the requirement of ASTM Specification A15-56T for new intermediate billet steel, deformed A16-54T for rail steel, deformed.

d. Spacing of Bars. - The spacing of bars shall be as shown on the drawings or as directed.

e. Relation of Bars to Concrete Surfaces. - The minimum cover for all main reinforcement shall conform to the dimensions shown on the drawings. The dimensions, as shown on the drawings, indicate the clear distance from the edge of the main reinforcement to the concrete surface. The concrete covering of stirrups, spacer bars, and similar secondary reinforcement may be reduced by the diameter of such bars.

f. Splicing. - All splices in reinforcement shall be as shown on the drawings. The lapped ends of bars may be separated sufficiently to permit embedment of the entire surface of the bar in concrete or may be securely wired together. Adjacent sheets of mesh reinforcement shall be spliced by lapping not less than six (6) inches; the lapped ends being securely wired or clipped together with standard clips.

g. Supports. - All reinforcement shall be secured in place by the use of metal or concrete supports, spacers or ties, as approved.

2-18. EMBEDDED ITEMS. - Before placing concrete, care shall be taken to determine that all embedded items are firmly and securely fastened in place as indicated on the drawings. Embedded items shall be free of oil and other foreign matter such as loose coatings of rust, paint, and scale. The embedding of wood in concrete will be permitted only when specifically authorized or directed.

2-19. PAYMENT. - No separate payment will be made for the work specified in this section and all costs in connection therewith shall be included in the applicable contract lump sum prices for the "Improvement Measures".

SECTION 3

MISCELLANEOUS ITEMS OF WORK
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SECTION 3

MISCELLANEOUS ITEMS OF WORK

3-01. SCOPE. - The work covered by this section of the specifications consists in furnishing all plant, labor, equipment, appliances, and materials and performing all operations in connection with the miscellaneous items of work, complete, in strict accordance with this section of the specifications and the applicable drawings and subject to the terms and conditions of the contract.

3-02. DRILLING FOR DOWELS AND ANCHORS. - Holes for dowels and anchors shall be drilled in sound concrete and the holes washed clean. Care shall be exercised to assure that holes are not drilled too deep or too large to provide proper anchorage for the dowels or anchors.

3-03. DOWELS. - Dowels shall conform to the requirements of steel reinforcement as specified in Paragraph 2-17. Holes for dowels shall be drilled as specified in Paragraph 3-02. Each hole shall be filled with a non-shrinking cement grout with just enough water to produce a plastic mix, and the dowel forced to the bottom of the hole. Grouting of dowels shall be accomplished not less than 6 days in advance of concrete operations to allow the grout to become properly set. Dowels shall be of sufficient length to extend the required depth into the existing concrete. Dowels which are found to be loose after the grout has set shall be replaced as directed and at the expense of the contractor.

3-04. ANCHORS. - Anchor bolts shall be fabricated of structural steel and shall be furnished with hexagon heads. Holes shall be drilled as specified in Paragraph 3-02. Anchors shall be of indicated lengths and shall be set 6 inches into existing concrete. Anchor bolts shall be secured in place using a 3-unit ring wedge cinch anchors as manufactured by the National Lead Company. Optional types of wedge type anchors may be used subject to approval. After anchors are installed, each hole shall be grouted as specified in Paragraph 3-03 above, for dowels.

3-05. PREMOLDED JOINT FILLER. - Bituminous fiber joint filler shall conform to the requirements of Federal Specification HH-F-341a, Type I, Class A, except that cork will not be permitted. Samples shall be submitted for approval.

3-06. SYNTHETIC RUBBER COMPOUND. - Synthetic rubber compound for expansion joints shall be polysulfide liquid polymer consisting of base material and separate activator. The material shall be such as to adhere to concrete and shall not lose its adhesion to concrete when the concrete is subjected to water and moisture after the application has been made. The material shall be mixed and applied by mechanical means and in accordance with the manufacturer's instruction. Physical requirements shall be as follows:

Tensile strength, psi	450-600
Elongation at break, percent	400-500
Hardness, Shore A	30-50
Viscosity of mix during working life	8800-poise (Brockfield)
To shrinkage during cure	Virtually zero
Water absorption	0.0%

ASTM Designations on Rubber Products

Tension - tensile, modulus, and elongation	ASTM D412-51T
Hardness test	ASTM D314-52T

Samples shall be submitted for approval.

Certificate of compliance may be submitted in lieu of samples.

3-07. RUBBER WATERSTOPS. - a. The material for waterstops may be of natural rubber, a suitable synthetic rubber or a blend of natural and synthetic rubber. Physical characteristics shall meet the following requirements:

<u>Physical Test</u>	<u>Test Value</u>	<u>Test Method Specification</u>
Tensile Strength	2500 p.s.i.(min.)	Fed.Test Method St'd 601-Mthd 4111
Elongation at Break	450% (min.)	Fed.Test Method St'd 601-Mthd 4121
300% Modulus	900 p.s.i.(min.)	Fed.Test Method St'd 601-Mthd 4131
Durometer Hardness		
Shore Type A	60 to 70	ASTM D676-55T
Water Absorption	5% by weight(max.)	Fed.Test Method St'd 601-Mthd 12411
Compression Set	30%(max.)	ASTM D395-55, Method D
Tensile Strength after aging	80%(min.) of tensile strength	Fed.Test Method St'd 601-Mthd 7001 Oxygen pressure test method

b. An affidavit from the manufacturer, showing that the results of the required tests conform to the above requirements, may be submitted in lieu of samples for testing. Such affidavit shall accompany each shipment of material.

c. Rubber waterstop material shall be protected from light when stored at the site.

3-08. STRUCTURAL STEEL. - Miscellaneous metal items such as anchor bolts, angles and plates which are indicated to be welded to existing sheet steel piling shall be welding quality steel and shall conform to the requirements of Federal Specification SS-S-741a, Type II, Class 1, or to ASTM A373-54T. Requirements for identification marking are waived. Certified mill reports will be furnished upon request by the Contracting Officer. Welding shall conform to the provisions of the current AWS "Standard Code for Arc and Gas Welding in Building Construction".

3-09. WELDING. - Welding, unless otherwise specified, shall conform to the provisions of the current AWS "Standard Code for Arc and Gas Welding in Building Construction". Welders who have not been certified within two years of date the contract is signed, will be required to pass successfully the qualification tests as prescribed by either the American Welding Society "Tentative Standard Qualification Procedure", the U. S. Navy Department "General Specifications for Inspection of Material", Appendix VII, "Welding", or U. S. Coast Guard "Marine Engineering Regulations and Material Specifications", before being assigned to production work. The contractor shall certify by name, to the Contracting Officer, the welding operators so qualified and the code under which qualified. The contractor shall require any welder to repeat the qualifying tests when, in the opinion of the Contracting Officer, the work of the welder indicates a reasonable doubt of his efficiency. In such cases, the welder shall be recertified, as above, if he successfully passes the retest; otherwise he shall be disqualified until he has successfully passed a retest. All expenses in connection with qualification and requalification shall be borne by the contractor.

3-10. PAYMENT. - No separate payment will be made for the work specified in this section and all costs in connection therewith shall be included in the applicable contract lump sum prices for "Improvement Measures".

SECTION 4

FOUNDATION DRILLING AND GROUTING (Index)

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SECTION 4

FOUNDATION DRILLING AND GROUTING

4-01. GENERAL. - a. Scope. - The work covered by this section of the specifications consists of furnishing all labor, plant, power, equipment and materials and performing all operations in connection with drilling grout holes; furnishing, handling, transporting, storing, mixing and injecting the grouting materials; patching the finished grout holes; care and disposal of drill cuttings, waste water and waste grout; backfilling; clean-up of the tailrace structure and work areas upon completion of the work and all such other operations as are incidental to the drilling and the grouting.

b. Program. - The work contemplated consists of constructing an underseepage cut-off beneath the railrace structure, the approximate locations, limits and details of which are indicated on the contract drawings. The amount of drilling and grouting which actually will be required is unknown, and will be governed by conditions encountered as the work progresses. The Government reserves the right to increase by as much as 100 percent or to eliminate any part of the entire drilling and grouting program should conditions indicate this as being desirable, and the contractor will not be allowed any increase in the unit prices bid in the schedule for drilling and grouting by reason of any changes in the amount of work or materials actually involved. The tailrace structure shall be dewatered for the drilling and grouting operations. Prior to the dewatering operation a wood or steel sheet piling barricade shall be constructed at the outlet of the tailrace structure to permit dewatering of the tailrace and prevent flooding of the work area during high river stage. The top elevation of the barricade shall be as selected by the contractor and approved by the Contracting Officer. The contractor shall be entirely responsible for the adequacy of the barricade and for the protection of grouting equipment and personnel against flood waters. If the water surface rises above and overtops the sheet piling, causing loss of certain grout holes, additional grout holes shall be provided, and the holes lost on account of flooding and the additional holes will be paid for at the applicable contract prices. The contractor shall be responsible for removal of his equipment on warning of an impending flood, and no payment will be made for loss or damage of equipment or for loss of or damage to the barricade. In the event the sheet piling barricade is not sufficient in providing a positive cut-off to the river, then additional protection shall be provided by placing sand bags immediately behind the sheet piling barricade. Other methods of providing positive cut-off to the river may be used with the approval of the Contracting Officer. The contractor shall perform such pumping as may be required to completely dewater the tailrace and maintain the work area in a dry condition, at no additional cost to the Government.

c. Procedures. - Grouting mixes, pressures, the pumping rate and the sequence in which the holes are drilled and grouted will be determined in the field and shall be as directed by the Contracting Officer.

4-02. EQUIPMENT. - Internal combustion engines within the tailrace structure for operation of drilling and grouting equipment shall be provided with exhaust pipes extended to the open air. Exhaust fumes within the tailrace structure will not be permitted.

a. General. - All drilling and grouting equipment used shall be of a type, capacity and mechanical condition suitable for doing the work, as determined by the Contracting Officer. The power and equipment and the layout thereof shall meet all applicable requirements of local, State, and Federal regulations and codes, both safety and otherwise.

b. Drilling Equipment. - Drilling equipment may be of any type which in the opinion of the Contracting Officer, is suitable for the adequate performance of the work specified and has ample capacity to accomplish the work in a satisfactory manner. In general, rock coring machines shall be of a modern self-contained type, either screw feed or hydraulic feed, complete with all accessories necessary for obtaining rock cores not less than 1-5/8 inches in diameter (BX size).

c. Grouting Equipment. - The grout plant shall be capable of supplying, mixing, stirring and pumping the grout, to the satisfaction of the Contracting Officer. The plant shall have a minimum capacity of 30 g.p.m. of grout injected at a pressure not greater than 50 p.s.i. It shall be maintained in first-class operating condition at all times and any grout hole that is lost or damaged due to mechanical failure of equipment or inadequacy of grout supply shall be replaced by another hole, drilled by the contractor at his expense.

4-03. GROUTING MATERIALS. - a. Composition. - Grout will be composed of water and cement. The grout mixes will in general have a water-cement ratio of 2:1, by volume, but will be varied to meet the characteristics of each hole as determined by conditions encountered. The various materials to be furnished by the contractor shall conform to the specifications listed in subparagraphs b and c.

b. Water. - The water used in the grout shall be fresh, clean and free from injurious amounts of sewage, oil, acid, alkali, salts, or organic matter.

c. Cement. - Cement used in grout shall conform to the requirements of Fed. Spec. SS-C-192a, for "Cements; Portland," Type III. Storage of cement shall be in accordance with Section 2. The use of bulk cement will be permitted provided the contractor provides methods of handling, transporting, and storage that are satisfactory to the Contracting Officer, otherwise, only cement furnished in cloth or paper bags will be accepted for use in the work. A sufficient quantity of cement shall be stored at or near the site of the work to insure that grouting operations will not be delayed by shortage of cement. In the event the cement is found to contain lumps or foreign matter of a nature and in amounts which, in the opinion of the Contracting Officer, may be deleterious to the grouting operations, screening through a standard 100 mesh screen may be required. No payment will be made for such screening.

4-04. GROUT HOLES. - a. General. - All holes for grouting shall be drilled at the locations, in the direction and to the depths shown on the drawings or as directed by the Contracting Officer. The sequence of grouting holes shall be determined by the split spacing method which is a procedure of selecting a grout hole midway, between two previously drilled and grouted holes. Each hole drilled shall be protected from becoming clogged or obstructed by means of a cap or other suitable device on the collar and any hole that becomes clogged or obstructed before completion of operations shall be cleaned out in a manner satisfactory to the Contracting Officer or another hole provided by and at the expense of the contractor.

b. Grout Hole Drilling. - Grout holes shall be drilled with standard drilling equipment and core recovery will be required. The minimum diameter of hole shall be as specified in Paragraph 4-05. If, as the work progresses, it is determined that holes to depths greater than indicated in the bid schedule are necessary, drilling to such greater depth will be ordered in writing by the Contracting Officer and the drilling to depths in excess of those required will be paid for at a negotiated unit price. Drilling will be done in accordance with the method hereinafter described. Whenever the drill water is lost, or artesian flow is encountered, the drilling operations shall be stopped and the hole grouted before drilling operations are resumed in such hole. The grout so injected remaining in a partially completed hole shall be removed therefrom by washing or other methods before it has set sufficiently to require redrilling. Redrilling required because of the contractor's failure to clean out a hole before the grout has set shall be performed at the contractor's expense except that where the grout has been allowed to set by direction of the Contracting Officer, the redrilling will be paid for at the rate of 50 percent of the schedule price for drilling the grout hole.

4-05. PROCEDURES FOR DRILLING AND GROUTING. - a. General. - The drilling and grouting shall be done by the methods and in the sequence described below:

- (1) Remove overburden to concrete slab to provide a work area of suitable size.
- (2) Drill a 4-inch hole through the concrete. Grout into the concrete slab a short piece of NX casing.
- (3) Wash down BX flush-joint casing to the depth required for the bottom of the grout hole. If obstructions are encountered which prevent advance of BX casing by washing and chopping, hole to be advanced by systematic drilling and blasting. Insert, to bottom of cased hole, BX size pressure testing apparatus, similar or equal to Sprague and Henwood Pressure Tester, page 5, Section 1, Core Drill Equipment and Supply Catalog, with one expanding packer located at approximately 5 feet from lower end of pressure tester.
- (4) Bump back BX casing 4 feet, and tighten packer against BX casing. Grout BX casing to short piece of NX casing in concrete slab.
- (5) Inject grout through sides and end of pressure testing equipment.
- (6) With packer of pressure testing equipment still tightened, and grout pressure maintained, retract BX casing 5 feet and again grout to NX casing.
- (7) Again inject grout, and continue by successively grouting and retracting casing.
- (8) When grouting operations reach bottom of concrete slab, remove BX casing and pressure tester, and pressure grout cored hole in slab through short piece of NX casing. In the two holes nearest the existing toe drain, injection of grout under pressure shall be stopped 5 feet below the concrete slab, and the remainder of the hole shall be filled by pouring grout into the hole and agitating to remove entrapped air by raising and lowering a drill rod.

Other methods of drilling and grouting may be used in lieu of the proposed method with the written approval of the Contracting Officer and provided further that such substitution does not result in any increased cost to the Government.

b. Grouting Pressures. - Grouting pressures to be used in the work will vary with conditions encountered in the respective holes and pressures used shall be as directed by the Contracting Officer. It is anticipated that pressures will range from 10 p.s.i. to 25 p.s.i. but in no event will pressures in excess of 50 p.s.i. be required.

c. Grouting. - All pressure grouting operations shall be performed in the presence of the Contracting Officer, and shall be in accordance with the following general procedure.

(1) Grout Mixes. - The water-cement ratio by volume will be varied to meet the characteristics of each hole as revealed by the grouting operation and will range between 3.0 and 0.6; the greater part of the grout probably being placed at a ratio of about 2.0.

(2) Grout Injection. - In general, if pressure tests indicate a tight hole, grouting shall be started with a thin mix. If an open hole condition exists, as determined by loss of drill water or inability to build up pressure during washing operations, then grouting shall be started with a thicker mix and with the grout pump operating as nearly as practicable at constant speed at all times; the ratio will be decreased, if necessary, until the required pressure has been reached. When the pressure tends to rise too high, the water-cement ratio shall be increased as may be required to produce the desired results. If necessary to relieve premature stoppage, periodic applications of water under pressure shall be made. Under no conditions shall the pressure or rate of pumping be increased suddenly, as either may produce a water-hammer effect which may promote stoppage. The grouting of any hole shall not be considered complete until that hole refuses to take any grout whatever at three-fourths of the maximum pressure required. Should grout leaks develop, the contractor shall caulk such leaks when and as directed by the Contracting Officer, the cost thereof being included in the contract price for "Portland Cement Grout".

If it is found impossible to reach the required pressure after pumping a reasonable volume of grout at the minimum workable water-cement ratio, the speed of the pumping shall be reduced or pumping shall be stopped temporarily and intermittent grouting shall be performed, allowing sufficient time between grout injections for the grout to stiffen. Following such reduction in pumping speed, if the desired result is not obtained, grouting in the hole shall be discontinued when directed by the Contracting Officer. In such event, the hole shall be cleaned, the grout allowed to set, and additional drilling and grouting shall then be done in this hole or in the adjacent area as directed, until the desired resistance is built up.

After the grouting of any stage of a hole is finished, the pressure shall be maintained by means of a stop-cock or other suitable device until the grout has set to the extent that it will be retained in the hole. Grout that cannot be placed, for any reason, within 2 hours after mixing shall be wasted. If such grout is mixed at the direction of the Contracting Officer or with his knowledge and consent, such wasted grout except as specified in paragraph 4-06a shall be paid for at a negotiated unit price for the materials contained therein.

(3) Equipment Arrangement and Operation. - The arrangement of the grouting equipment shall be such as to provide a continuous circulation of grout throughout the system and to permit accurate pressure control by operation of a valve on the grout return line, regardless of how small the grout take may be. The equipment and lines shall be prevented from becoming fouled by the constant circulation of grout and by the periodic flushing out of the system with water. Flushing shall be done with the grout intake valve closed, the water supply valve open, and the pump running at full speed.

(4) Protection to Work and Cleanup. - During grouting operations the contractor shall take such precautions as may be necessary to prevent drill cuttings, equipment exhaust oil, wash water, grouting pressure, and grout, from defacing or damaging the permanent structure. The contractor will be required to furnish such pumps as may be necessary to care for waste water and grout from his operations. The contractor shall, upon completion of his operations, clean up all waste resulting from his operations that is unsightly or would interfere with the efficient operation of the project as anticipated by the original design. No separate payment will be made for the work required for the clean up.

d. Records. - The Contracting Officer will keep records of all drilling and grouting operations, such as a log of the grout holes, results of washing and pressure testing operations, time of each change of grouting operation, pressure, rate of pumping, amount of cement for each change in water-cement ratio, and other data as deemed by him to be necessary. The contractor shall furnish all necessary assistance and cooperation to this end.

4-06. MEASUREMENT AND PAYMENT. - a. General. - The contract prices for the various items of work and materials, as described in paragraphs 4-06b through 4-06d, shall constitute full compensation for mobilizing, demobilizing, dewatering, furnishing all equipment necessary to perform the drilling and grouting in accordance with these specifications; all drilling of grout holes, care and disposal of waste water and waste grout, clean-up of the site, furnishing, handling, transporting and storing of grout materials, and for furnishing all labor and supplies incidental to the work. No payment will be made for grout wasted due to improper anchorage of grout pipe connections, or which is wasted due to negligence on the part of the contractor, nor for grout which is rejected by the Contracting Officer because of improper mixing. Payment will be made at the applicable contract unit prices for materials contained in grout which are wasted, where the wasting is not due to negligence on the part of the contractor.

b. Mobilization and Demobilization. - The cost of assembling all plant and equipment at the site preparatory to initiating the work and for removing it therefrom when the drilling and grouting program has been completed; and for furnishing and installing the sheet pile barricade, sand-bagging and pumping to dewater the tailrace structure; will be made at the established contract lump-sum price for Item No. 2a, "Mobilization and Demobilization". Sixty percent of the contract lump-sum price will be paid following completion of moving onto the site, including complete assembly in working order, of all equipment necessary to perform the required drilling and grouting operations, and including erection of a satisfactory barricade to dewater the tailrace. The remaining 40 percent of the contract lump-sum price will be paid when the barricade and all equipment has been removed from the site.

c. Drilling Grout Holes and Placing Grout. - Drilling of grout holes and placing grout will be measured for payment on the basis of the linear feet of holes actually drilled in soil or concrete as shown on the drawings or as directed by the Contracting Officer. Payment for drilling grout holes and placing grout will be made at the contract price per lineal foot for Item No. 2b, "Drilling Grout Holes and Placing Grout", which price shall include full compensation for excavation preparatory to drilling, drilling grout holes, proportioning, mixing, and injecting grout, and all other work in connection with grouting not specifically included for payment under Items Nos. 2a and 2c.

d. Portland Cement in Grout. - Portland cement will be measured for payment on the basis of the number of cubic feet (94 pounds) of cement used in the grout satisfactorily placed in grout holes and in exploratory holes. Payment for cement will be made at the contract price per cubic foot for Item No. 2c, "Portland Cement in Grout".

STANDARD FORM 21, *Stencil, front side.*
REVISED MARCH, 1953
GENERAL SERVICES ADMINISTRATION
GENERAL REGULATION NO. 13

BID FORM
(CONSTRUCTION CONTRACT)

REFERENCE

Serial No. CIVENG-19-016-58-1

*Read the Instructions to Bidders (Standard Form 22)
This form to be submitted in duplicate*

DATE OF INVITATION
8 July 1957

NAME AND LOCATION OF PROJECT

T-TYPE CANTILEVER FLOODWALL IMPROVEMENT MEASURES
AT HARTFORD AND EAST HARTFORD, CONNECTICUT AND
CHICOPEE, HOLYOKE AND NORTHAMPTON, MASSACHUSETTS,
CONNECTICUT RIVER, CONNECTICUT AND MASSACHUSETTS.

TO: Division Engineer
U.S. Army Engr. Div., New England
Corps of Engineers
150 Causeway Street
Boston 14, Massachusetts

(Date)

In compliance with your invitation for bids of the above date, the undersigned hereby proposes to furnish all labor, equipment, and materials and perform all work for T-Type Cantilever Floodwall Improvement Measures at Hartford and East Hartford, Connecticut and Chicopee, Holyoke and Northampton, Massachusetts, Connecticut River, Connecticut and Massachusetts

in strict accordance with the specifications, schedules, drawings, and conditions for the consideration of the following amount(s)

See attached Unit Price Schedule.

Supplement to Bid Form, Sheets numbered 1 and 1a, attached hereto forms a part of this bid as does attached Unit Price Schedule.

and agrees that, upon written acceptance of this bid, mailed, or otherwise furnished, within calendar days (60 calendar days unless a shorter period be inserted by the bidder) after the date of opening of bids, he will within 10 calendar days (unless a longer period is allowed) after receipt of the prescribed forms, execute Standard Form 23, Construction Contract, and give performance bond and payment bond on Government standard forms, if these forms are required, with good and sufficient surety or sureties.

(Continue on other side)

The undersigned agrees that if awarded the contract, he will commence the work within 15 calendar days after the date of receipt of notice to proceed, and that he will complete the work within * calendar days after the date of receipt of notice to proceed.

*For completion date or dates see Paragraph SC-1 of the specifications.

The undersigned acknowledges receipt of the following addenda to the drawings and/or specifications (Give number and date of each):

The undersigned represents (Check appropriate boxes):

See Sheet 1a of Supplement to Bid Form. (2) (a) that he ☐ has ☐ has not, employed or retained any company or person (other than a full-time bona fide employee working solely for the bidder), to solicit or secure this contract; and (b) that he ☐ has, ☐ has not, paid or agreed to pay to any company or person (other than a full-time bona fide employee working solely for the bidder) any fee, commission, percentage or brokerage fee, contingent upon or resulting from the award of this contract, and agrees to furnish information relating thereto as requested by the contracting officer. (Note: For interpretation of the representation, including the term "bona fide employee," see General Services Administration Regulations, Title 41, secs. 150.7 and 150.5(d) Fed. Reg., Dec. 31, 1952, Vol. 17, No. 253.)

Enclosed is bid guarantee, consisting of

in the amount of

NAME OF FIRM OR INDIVIDUAL (Type or print)	(with residential FULL NAME OF ALL PARTNERS (Type or print) addresses)
BUSINESS ADDRESS (Type or print)	
BY (Signature in ink. Type or print name under signature)	
TITLE (Type or print)	
STATE OF INCORPORATION (Type or print)	

DIRECTIONS FOR SUBMITTING BIDS

Envelopes containing bids, guarantee, etc., must be sealed, marked, and addressed as follows:

Division Engineer
U.S. Army Engr. Div., New England
Corps of Engineers
150 Causeway Street
Boston 14, Massachusetts

CAUTION: Do not include in the envelope any bids for other work.

Bids should not be qualified by exceptions to the bidding conditions.

UNIT PRICE SCHEDULE

<u>Item No.</u>	<u>Description</u>	<u>Estimated Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Estimated Amount</u>
<u>Lot A</u>					
<u>Hartford and East Hartford, Connecticut</u>					
1	Improvement Measures - Hartford	1	Job	L.S.	\$ _____
2	Improvement Measures - East Hartford	1	Job	L.S.	_____
TOTAL LOT A				\$	_____
<u>Lot B</u>					
<u>Chicopee, Massachusetts</u>					
1	Improvement Measures-Chicopee	1	Job	L.S.	\$ _____
2	Foundation Drilling and Grouting				
	a. Mobilization and Demobilization	1	Job	L.S.	_____
	b. Drilling Grout Holes and Placing Grout	304	L.F.	\$	_____
	c. Portland Cement in Grout	300	Cu.Ft.		_____
3	Piezometers	3	Each		_____
TOTAL LOT B				\$	_____
<u>Lot C</u>					
<u>Holyoke and Northampton, Massachusetts</u>					
1	Improvement Measures - Holyoke	1	Job	L.S.	\$ _____
2	Improvement Measures - Northampton	1	Job	L.S.	_____
TOTAL LOT C				\$	_____

Note: Bidders shall submit prices under all items of each lot in which he is interested in receiving an award. The work under each lot will be awarded as a whole to one bidder. See Paragraph 5 of the Invitation for Bids.

SUPPLEMENT TO BID FORM
(Construction Contract)

If a bid or modification to a bid based on unit prices is submitted and provides for a lump sum adjustment to the total estimated cost, the application of the lump sum adjustment to each unit price, including lump sum units, in the bid schedule must be stated or, if it is not stated, the bidder agrees that the lump sum adjustment shall be applied on a prorata basis to every unit price in the bid schedule.

In case of error in the extension of prices, the unit price will govern.

The bidder warrants that he has available or under his control plant of the character and in the amount required to complete the proposed work within the specified time.

It is hereby warranted that in the event award is made to the bidder, there will be furnished under this contract, or used in the performance of the work covered by this contract, only such unmanufactured articles, materials, and supplies as have been mined or produced in the United States and only such manufactured articles, materials, and supplies as have been manufactured in the United States substantially all from articles, materials, or supplies mined, produced, or manufactured, as the case may be, in the United States, except as noted below or otherwise indicated in this bid or authorized in the invitation.

SUPPLEMENT TO BID FORM
(Construction Contract)

Bidder represents (1) that it () is, () is not, a small business concern. For this purpose, a small business concern is a concern that (a) is not dominant in its field of operation and, with its affiliates, employs fewer than 500 employees, or (b) is certified as a small business concern by the Small Business Admin. (See Code of Fed. Reg., Title 13, Chap. 11, Part 103, 21 Fed. Reg. 9709, which contains the detailed definition and related procedures). Bidder represents that it () has, () has not, previously been denied a small business certificate by the Small Business Administration.